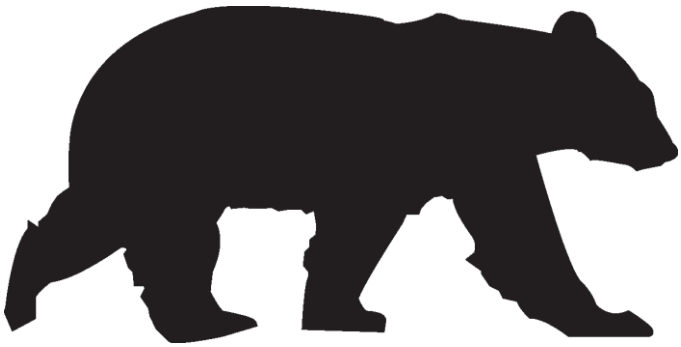
Understanding Local Residents' Bear Population Preferences

Results from a Survey in Upstate New York



June 2019

CCSS Series No 19-2

Prepared by:

William F. Siemer, T. Bruce Lauber,
Richard C. Stedman, and Daniel J. Decker
Center for Conservation Social Sciences
Department of Natural Resources
Cornell University

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Siemer, W. F., T. B. Lauber, R. C. Stedman, and D. J. Decker. 2019. Understanding local residents' bear population preferences: Results from a survey in Upstate New York. Center for Conservation Social Sciences Publ. Series 19-2. Dept. of Nat. Resources., Coll. Agric. and Life Sci., Cornell Univ., Ithaca, NY. 73 pp.

This report is available electronically at: https://ccss.dnr.cals.cornell.edu/

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EXECUTIVE SUMMARY

The New York State Department of Environmental Conservation (DEC) is responsible for black bear management in the state. The 2014 – 2024 Black Bear Management Plan for New York State identifies a need to better understand public perceptions and experiences with bear impacts. More specifically, Strategies 1.1.1 and 1.1.3 in the plan call for DEC to collect public input on tolerance for black bears and adjust bear population objectives as needed. In 2018, DEC sponsored a study that implemented a mail survey across upstate New York to learn more about residents' bear-related perceptions, interactions with black bears, and bear population preferences. The purpose of this report is to describe results from the 2018 black bear impacts mail survey. Information from the study will inform DEC decisions about future bear population objectives across the state.

Study objectives

Assess New York State property owners':

1. preference for future bear population statewide and in residents' local area.
2. experiences with bears and tolerance for bear impacts.
3. willingness to take steps to prevent problem interactions with black bears.

METHODS

Survey instrument and implementation

In cooperation with a team of DEC wildlife professionals (hereafter referred to as the contact team), we developed a self-administered questionnaire to address the research objectives described above. The questionnaire characterized property owners': bear-related interest, concerns and experiences, perceived risks and benefits of having black bears in New York State, perceived bear population trend, perceptions of proximity to bears, acceptance capacity for bears, trust in the agency that manages bears, and background characteristics.

In the 2014-24 bear management plan, DEC partitioned upstate New York into eight black bear management zones. DEC defined a bear management objective in each zone based on bear population density, recommendations from previous Stakeholder Input Groups, public meetings, and general public feedback. DEC set a management goal of maintaining moderate bear population density in three zones (i.e., Central Adirondack, Alleghany, Northern Catskill), maintaining low bear population density in three zones (i.e., Tug Hill, Southern Tier, Eastern Hudson), reducing the bear population density in one zone (i.e., Southern Catskill), and keeping bear occurrence infrequent in one zone (i.e., Lake Plain) (see page 4 for bear management zone map). We sampled 1,400 property owners with mailing addresses in each of those bear management zones (i.e., total sample of 11,200 for the 8 bear management zones).We drew the sample from New York State tax rolls of residential property owners using zip codes that DEC identified for each bear management zone. The sampling frame included urban and rural areas.

We sampled from property tax codes representing most types of residential property, including single and multi-family year-round residences, rural residences with acreage, properties used in

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agricultural production that contained a primary residence, estates, and mobile homes. We also included recreational-use properties. We did not include owned property in the sample unless the address listed for the property owner was in the same zip code as the listed property. This step ensured that all persons contacted were residents of the bear management zone being surveyed.

We implemented survey mailings between October 10, 2018 and November 7, 2018. We contacted each member of the sample up to 4 times (i.e., an initial letter and questionnaire, a reminder postcard a week later, a second reminder letter and replacement questionnaire 2 weeks after the first reminder, and a final reminder about 1 week after the third mailing). We contracted the Survey Research Institute at Cornell University (SRI) to complete follow-up telephone interviews with a sample of 25 nonrespondents in each bear management zone. SRI completed 200 interviews with nonrespondents between December 6, 2018 and December 17, 2018. Interviews contained 17 key questions from the mail survey and took 5 minutes or less to complete.

Analysis

All analyses were completed using IBM SPSS Statistics for Windows, Version 24.0. We used Pearson's chi square test and t-tests to test for differences between respondents and nonrespondents at the $P < 0.05$ level. We used analysis of variance (ANOVA) to identify differences between mean bear population perceptions and mean bear population preferences of respondents in different bear management zones. We used ordinary least squares linear regression to test a model of factors that affect acceptance capacity for black bears in each bear management zone.

RESULTS

Survey Response

We received a total of 4,055 completed questionnaires from a pool of 10,028 deliverable questionnaires, yielding an overall response rate of 40%. Response rates varied by bear management zone, ranging from a low of 33% in the Eastern Hudson zone to 47% in the Northern Catskill zone.

Respondent-nonrespondent Comparisons

Respondents and nonrespondents did not differ with regard to their preference for bear population in their local area. But we found a number of statistically-significant differences between respondents and nonrespondents. Nonrespondents were more likely than respondents to be female (45% vs. 35%). Nonrespondents were less likely than respondents to feed birds (54% vs. 61%); participate in hunting (21% vs. 34%), hunt bears (5% vs. 10%), have seen a bear (71% vs. 78%), or to have had a bird feeder or grill damaged by a bear (10% vs. 17%).

Nonrespondents had a lower level of interest in bears than respondents. Nonrespondents were more likely than respondents to say they were not at all concerned about encountering a bear (51% vs. 32%) or about residential property damage by bears (62% vs. 44%). Nonrespondents also were more likely than respondents to say there were no bears in their area (35% vs. 22%), and to respond "don't know" when asked how the bear population in their local area had changed over the past 5 years (34% vs. 23%).

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During preliminary analysis, we explored whether respondent-nonrespondent differences could be addressed in part by weighting to adjust the male-female ratio. We found that weighting the data based on gender had little effect on the key variable from the survey (i.e., bear population preference). Therefore, the study contact team made a decision to not have us adjust the data based on gender. The results presented in this report have not been weighted to adjust for respondent-nonrespondent differences.

Respondent Characteristics

Mean age of respondents was 62 years. In all bear management zones the majority of respondents were male (from 60% in the Eastern Hudson zone to 70% in the Tug Hill zone. Over a third (34%) of all respondents participated in some type of hunting, even though less than 10% of adult New York State residents hunt are estimated to hunt. The percentage of respondents who were hunters varied by zone, from 21% in the Eastern Hudson zone to 42% in the Tug Hill zone. This has management importance, because collectively, hunters differed from nonhunters on black bear population preference.

Bear-related Experiences and Interactions

A majority of respondents (62% – 90%) had seen a wild black bear somewhere during their lifetime. Many also had seen, or heard about someone who had seen, a black bear within a mile of their home. In five of the eight bear management zones, majorities of respondents had seen (or heard about someone who had seen) a black bear within a mile of their current residence.

Negative experiences with bears are thought to influence risk perceptions. We found that personal experiences with damage to bird feeders or grills ranged from a low of 5% in the Tug Hill and Lake Plain, up to 30% in the southern Catskills. In all bear management zones, very few respondents had bear-related experiences that they perceived as threatening to pets, livestock, or people.

Black Bear Acceptance Capacity

In all bear management zones, a majority of respondents preferred that the bear population stay about the same both statewide and in their local area. The proportion of respondents who preferred a decrease in the local bear population ranged from 11% (Lake Plain) to 26% (Southern Catskills). The proportion of respondents who preferred an increase in the local bear population ranged from 14% (Southern Catskills) to 30% (Southern Tier). In every management zone, hunters were more likely than nonhunters to prefer an increase in the local bear population, and nonhunters were more likely than hunters to prefer that the local bear population stay about the same.

We created a 4-item black bear acceptance scale that ranged from 1 (i.e., bear population much too high / want the bear population to decrease greatly) to 5 (i.e., bear population much too low / want the bear population to increase greatly). In every management zone, scale scores are near the scale midpoint, because a majority of respondents thought the bear population was about the right size and wanted it to stay about the same. Acceptance capacity was relatively uniform, but there were some differences between management zones. For example, acceptance of black bear

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populations was higher in the Lake Plain zone (where bears occur infrequently) than it was in 5 other zones (i.e., acceptance was higher in the Lake Plain zone than it was in the Central Adirondacks, Alleghany, Northern Catskills, Eastern Hudson, and Southern Catskills zones). Acceptance capacity for black bears was lower in the Southern Catskills than it was in 3 other management zones (i.e., lower in the Southern Catskills than it was in the Tug Hill, Southern Tier, or Lake Plain zones).

Perceived Benefits of Bears

Majorities of respondents in all bear management zones expressed moderate to high interest in black bears. Results on the 4-item benefits scale indicated relatively high bear-related benefit perceptions. Majorities of respondents in all zones agreed that the presence of bears in New York State improves quality of life, improves ecosystem health, and provides hunting and viewing opportunities. In all zones, majorities of respondents disagreed that black bears are a nuisance.

Perceived Risks of Bears

Results on the 4-item bear-related risks scale indicated relatively low bear-related risk perceptions across the state. In all bear management zones, a majority of respondents disagreed that: encounters with bears are likely to be fatal, that they were unfamiliar with bear-related risks, or that they were vulnerable to bear-related risks. In most zones, majorities of respondents expressed no concern or only slight concern about encountering bears or having property damaged by bears. Concern about these types of interactions was highest in the Southern Catskills.

Control (Self-Efficacy)

Respondents also typically had a high sense of self-efficacy, or personal control over, bear-related risks. Respondents generally agreed that they can prevent conflicts with bears and that conflicts will be reduced as people learn to live with bears.

Perceived Distance from Bears and Bear-related Impacts

We found relatively wide variation across bear management zones on mean scores for a 6-item scale to measure perceptions of geographic, social, and temporal distance from bears and bear-related impacts. For example, respondents in the northern and southern Catskills areas were more likely than respondents in most other zones to perceive themselves as geographically close to black bears, know others who have experienced bear-related impacts, and believe that they are likely to be affected by bears in the future. Respondents from the Lake Plain were more likely than respondents in all other zones to perceive themselves as geographically, socially, and temporally distant from black bears and bear-related impacts.

Trust in DEC

Results on the 4-item social trust scale indicated high confidence in DEC, the agency that manages black bears in New York State. Over 70% of respondents agreed that they were

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confident that DEC: can effectively manage bears, knows how to use bear management techniques, responds appropriately to human-bear conflicts, and listens to public concerns about bear management.

Predictive Model for Black Bear Acceptance Capacity

We used ordinary least squares linear regression in each bear management zone to test a model of factors that affect black bear acceptance capacity, scored on a 4-item acceptance scale. Predictor variables included multi-item scales on bear-related benefits, risks, control (self-efficacy), perceived distance from bears, trust in DEC, and a dummy variable on hunting participation (hunt: yes/no). All 6 variables were significant predictors of acceptance capacity in 2 or more management zones. In any given zone, 3-4 variables were significant predictors, and the model was able to explain 31% to 50% of the variance in acceptance capacity. In all zones, most of the variance in acceptance capacity was explained by just 2 variables: perceptions of bear-related risks and benefits.

Willingness to Take Actions to Avoid Bear Attraction

We asked property owners how willing they were to take any of five actions that could prevent attraction of black bears. In all zones, a majority of respondents were very willing to take relatively low-cost problem prevention behaviors (e.g., keep garbage in a secure building prior to disposal). They were less willing to take more costly actions (i.e., were less willing to pay higher garbage collection fees to pay for distribution of bear-proof garbage containers) or actions that might limit their enjoyment of wildlife (i.e., were less willing to stop feeding birds in spring or summer).

DISCUSSION

This publication documents findings from a 2018 survey of property owners across 8 different geographic areas covering all areas of upstate New York (excluding the cities of Buffalo, Rochester, and Albany). The survey provides a snapshot of property owners' black bear population preferences, interactions with and perceptions of black bears, and willingness to take actions to avoid attraction of bears. Data from this study provide a snapshot of public tolerance for black bears, which was a DEC information need identified in the 2014-24 black bear management plan (DEC 2104).

This study tested a model of factors that predict acceptance capacity for black bears. Consistent with previous research, we found strong support for the proposition that perceived benefits and costs of having black bears in one's local area are important predictors of black bear acceptance capacity. We also found support for the other variables in the hazard acceptance model that have been identified as predictors of acceptance capacity, including sense of control over exposure to risks and trust in the agency responsible for bear management. In addition, we applied construal theory to understand acceptance capacity, and found support for the hypothesis that perceived distance from bears and bear-related impacts plays a role in acceptance capacity. This is a valuable insight in the context of expanding black bear populations. Future investigations of acceptance capacity for black bears could benefit from including perceived distance from bears and bear impacts in models of acceptance capacity.

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Finally, we found that most respondents were very willing to make minor changes in behavior (e.g., keeping garbage containers in a secure building). They were less willing to take actions that curtailed wildlife viewing benefits (e.g., they were less willing to stop feeding birds in spring or summer), and many were not at all willing to pay a higher monthly fee for use of bear-resistant garbage cans (an example of the kind of collective action that may be needed to address community-wide problems with bears). These findings hint at the challenges of fostering collective actions that can maintain conditions for tolerance of black bears in New York State.

Management Implications

In every bear management zone a majority of property owners preferred that the bear population in their area stay about the same size. These preferences are mostly consistent with DEC's management objectives. In 7 of the 8 bear management zones in New York State DEC's management objective is to keep the bear population at current levels.

In the Southern Catskill management zone, however, DEC's management objective is to reduce the bear population, while a majority (60%) of property owners preferred that the bear population in their area stay about the same size. But several results support the conclusion that the Southern Catskill BMZ is distinct from other zones in ways that may necessitate additional management attention. Property owners in that zone were more likely to see bears <1 mile from their home, they were most likely to have problems with bears at grills or bird feeders, they had the highest level of concern about negative human-bear interactions, and they were more likely than respondents from other zones to believe that bears will be more of a problem in the future. Twenty-six percent of respondents from the Southern Catskill BMZ (including over a third of respondents who hunted) preferred a bear population reduction in their local area, which was a higher proportion than in any other zone. All of those findings suggest a need for actions aimed at reducing negative human-bear interactions. Those actions could include information, education, and interventions by DEC to directly assist individuals or communities experiencing bear-related problems. These findings also could be used as supporting evidence for DEC's current management goal (i.e., bear population reduction) in the Southern Catskill BMZ.

Despite the fact that the majority of property owners in all zones prefer that the bear population stay about the same, other property owners have different opinions. Ongoing efforts to communicate with stakeholders about the rationale behind bear management objectives could help stakeholders understand why DEC is striving to stabilize or reduce bear populations in any given management zone, even in cases where measures of acceptance capacity suggest that bear population growth would be acceptable to a portion of area residents.

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ACKNOWLEDGMENTS

We extend our appreciation to property owners of New York State for their participation in this study. For their assistance during all phases of this research, we express our thanks to Jeremy Hurst, Mike Schiavone, Matt Merchant, and Steve Heerkens (New York State Department of Environmental Conservation (DEC) Bureau of Wildlife).

The Survey Research Institute (SRI) at Cornell University conducted nonrespondent follow-up interviews. Nancy Connelly assisted with sampling design and analysis. Karlene Smith and other CCSS staff assisted with survey implementation and data coding.

Our survey instrument and request to conduct survey research was reviewed and granted approval by the Cornell University Office of Research Integrity and Assurance (Institutional Review Board for Human Participants Protocol ID#: 1004001374).

This work was supported by New York Federal Aid in Wildlife Restoration Grant WE–173–G.

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TABLE OF CONTENTS

`

LIST OF TABLES

LIST OF FIGURES

`

INTRODUCTION

The black bear population in New York State is secure statewide (DEC 2014). In recent decades, black bears have expanded well beyond their historic Catskill, Allegany, and Adirondack core ranges. Much of the state now has resident black bears, and transient black bears have been observed in all upstate counties. New York's black bear population in areas open to hunting is currently estimated at a minimum of 6,000 – 8,000 bears (DEC 2014). The management context for black bears in New York State is maintaining bear populations within levels acceptable to local residents.

The New York State Department of Environmental Conservation (DEC) is responsible for management of the state's black bears. DEC has established bear management goals across the state Figure 1) that reflect understanding of bear population trends in those areas, recommendations from previous Stakeholder Input Groups (www.dec.ny.gov/animals/7213.html), and input obtained through public meetings, public attitude surveys (Siemer and Decker 2003, 2006), and ongoing interactions with bear management stakeholders.

The 2014 – 2024 Black Bear Management Plan for New York State outlines five strategic goals (DEC 2014), one of which is to maintain bear populations at levels acceptable to the public (DEC 2014, page 7). Strategies 1.1.1 and 1.1.3 in the plan describe four objectives for bear population trends in various regions of New York and call for DEC to collect public input on tolerance for black bears and adjust bear population objectives as needed (DEC 2014, page 18). In 2018, DEC sponsored a study that included a mail survey, implemented across upstate New York, to learn more about residents' bear-related perceptions, interactions with black bears, and bear population preferences. The purpose of this report is to describe results from the 2018 black bear impacts mail survey. Information from the survey will inform DEC decisions about future bear population objectives across the state.

Project Objectives

The overall goal of this study is to obtain information that DEC staff can use to reassess bear population objectives across New York State, and improve understanding of the factors that influence acceptance capacity for black bears. In cooperation with a team of DEC wildlife professionals (hereafter referred to as the contact team), we developed the following three research objectives.

Assess New York State property owners':

1. preference for future bear population statewide and in residents' local area.

2. experiences with bears and tolerance for bear impacts.

3. willingness to take steps to prevent problem interactions with black bears.

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CONCEPTUAL FOUNDATION

Acceptance Capacity for Black Bears

The central purpose of this study was to increase understanding of acceptance capacity (WAC) for black bears in different regions of the state. Decker and Purdy (1988) defined "wildlife acceptance capacity" (WAC) as the maximum wildlife population level in an area that is acceptable to an individual or group of people. They suggested that stated preferences for a deer population level could be used as an indicator of WAC and they encouraged wildlife managers to focus on identifying WAC for key stakeholders (e.g., farmers, hunters, motorists) at appropriate geographic scales as a source of input to consider when evaluating deer population objectives for a given area. Previous studies have demonstrated a relationship between high deer population density, problem experiences with deer, and preferences for deer population reduction, but deer population density may only explain part of the variation in WAC across stakeholder groups (West and Parkhurst 2002). DEC sponsored multiple studies in the 1970s and 1980s to identify WAC for key deer management stakeholders and improve understanding of the range of factors that influence WAC (Brown et al. 1978, Decker and Brown 1982, Decker and Gavin 1987, Sayre and Decker 1989).

Stated preferences for a wildlife population have also been used to understand acceptance capacity for other species, including beaver (Jonker et al. 2006, 2009), mountain lion (Riley and Decker 2000), and black bear (Zajac et al. 2012). WAC can be measured with questionnaire items that assess respondents' perception of a wildlife population (e.g., too high – too low) or preferences for change in that population (e.g., desires for an increase, decrease, or no change in the current population size). Calls for reduction of a wildlife population are an indicator that acceptance capacity for a species has been exceeded (Bruskotter and Wilson 2014). In our study, an expressed opinion that the bear population is too large, and a desire to reduce the size of the bear population served as an indicator that acceptance capacity for bears has been exceeded.

Factors Associated with Acceptance Capacity for Black Bears

Based on a review of previous studies, Bruskotter and Wilson (2014) propose a hazard-acceptance model depicting factors that influence acceptance capacity for large carnivores. They suggest that five factors—perceived benefits, perceived costs, control over the hazard, social trust in the agency that manages that species, and affect for the species—offer the most parsimonious explanation of acceptance for large carnivores.

Risk and benefits. Of the factors identified in the hazard-acceptance model, perceived risks and benefits of a species appear to play the most important role in acceptance. For example, risk and benefit perceptions explained more than half of the variability in population preference for black bears in Ohio (Zajac et al. 2012, Slagel et al. 2012). Heightened risk perceptions have been linked to preferences for a lower black bear population in Ohio (Zajac et al. 2012) and a preference for fewer mountain lions in Montana (Riley and Decker 2000). Individuals who perceive themselves to be negatively impacted by a species are more likely than those who are not negatively impacted to prefer a reduction in population of that species (Riley and Decker 2000, Lischka et al. 2008, Bruskotter et al. 2009). Problem interactions with black bears can

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raise levels of bear-related concern (Siemer et al. 2009), which may in turn influence acceptance capacity for black bears.

Psychological distance. Based on a review of construal-level theory of psychological distance (Liberman et al. 2007, Liberman and Trope 2008, Trope and Liberman 2003; 2010), we believed it would be useful to apply construal theory to research on black bear acceptance capacity. Construal theory postulates that more distant phenomena are construed in more abstract high-level ways focusing on general decontextualized features. Closer phenomena are construed in more concrete low-level ways focusing on specific contextual details. Trope and Liberman (2003, 2007) identified four dimensions of psychological distance: temporal (distance in time), social (personal relevance), spatial (geographical distance), and hypothetical (degree of uncertainty). Measures of psychological distance have been used in studies seeking to understand wildlife conservation behavior (Muskavage 2016) and promoting actions to address climate change (Spence et al. 2012). We hypothesized that this theory could be applied to understand how perceived distance from bears and bear-related impacts influences bear acceptance capacity in New York State.

Trust in management agency. Bruskotter and Wilson (2014: 160) point out why it is generally useful to measure social trust in studies related to large carnivore conservation.

> "…trust serves as a heuristic, or decision-making shortcut, where if one trusts the managing agency he or she will both believe the information being provided and act in accordance with relevant recommendations (Griffin *et al.* 1999). In the context of carnivore conservation, hazard-acceptance theory would predict that greater trust in wildlife management agencies leads to lower perceived risks and higher perceived benefits associated with the species, which in turn leads to greater acceptance of the hazard (i.e., species or population)." (page 160)

Indeed, Zajac et al. (2012, page 1336) found evidence suggesting that trust in the state wildlife management agency helped explain acceptance of an emerging black bear population in Ohio.

> "People with greater trust [in the Ohio Division of Wildlife] perceived more benefit and less risk from black bears. People who perceived more risk from black bears were less accepting of them, whereas those who perceived more benefit from bears were more accepting."

METHODS

Mail Survey Instrument

In cooperation with the contact team, we developed a self-administered mailed questionnaire to address our research objectives (Appendix A). The questionnaire characterized property owners': bear-related interest, concerns and experiences, perceived risks and benefits of having black bears in New York State, perceived bear population trend, perceptions of personal distance from bears, acceptance capacity for bears, trust in the agency that manages bears, and respondents' background characteristics.

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In the 2014-24 bear management plan, DEC partitioned upstate New York into eight black bear management zones (Figure 1). DEC defined a bear management objective in each zone based on bear population density, recommendations from previous Stakeholder Input Groups, public meetings, and general public feedback. DEC set a management goal of maintaining moderate bear population density in three zones (i.e., Central Adirondack, Alleghany, Northern Catskill), maintaining low bear population density in three zones (i.e., Tug Hill, Southern Tier, Eastern Hudson), reducing the bear population density in one zone (i.e., Southern Catskill), and keeping bear occurrence infrequent in one zone (i.e., Lake Plain). We sampled 1,400 property owners with mailing addresses in each of those bear management zones (i.e., total sample of 11,200 for the 8 management zones).We drew the sample from New York State tax rolls of residential property owners using zip codes that DEC identified for each zone. The sampling frame included urban and rural areas.

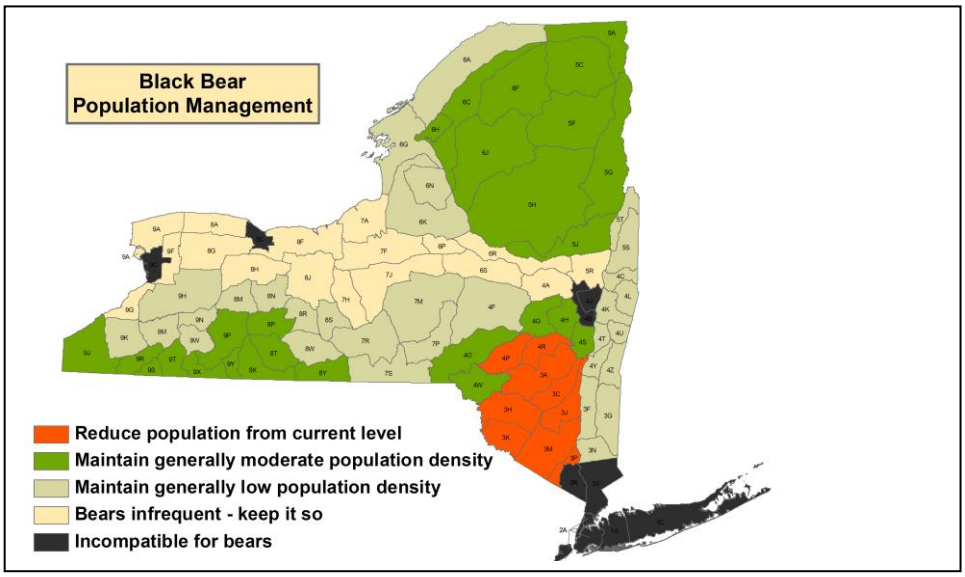

Figure 1. Map of New York State displaying bear population objective in each wildlife management unit (WMU). Source: DEC 2014.

We considered drawing our sample of residents from one of three different sampling frames: the universe of upstate New York households with listed telephone numbers, the universe of listed addresses in upstate New York, or the universe of residential property owners in upstate New York. The listed household sample does not include the substantial and growing proportion of state residents who no longer have a land-line telephone; we decided not to use the listed household sampling frame because it no longer provides adequate coverage of population of interest. Listed *address* samples do provide substantial coverage of the population of interest, but often the name of the addressee is not included. In our experience conducting mail surveys, sending survey correspondence to an address (instead of a person) has contributed to high nonresponse and high undeliverable rates. We decided that New York tax rolls provided the best sampling frame for our purposes. This property owner frame allowed us to sample from a known universe of residents and to address correspondence to those residents. We accepted the

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constraint that this approach is biased toward people who are older than the general population (because mean age of homeowners is higher than mean age of renters).

We sampled from property tax codes representing most types of residential property, including single and multi-family year-round residences, rural residences with acreage, properties used in agricultural production that contained a primary residence, recreational use properties, estates, and mobile homes. We did not include owned property in the sample unless the address listed for the property owner was in the same zip code as the listed property. This step ensured that all persons contacted were residents of the bear management unit being surveyed.

Survey Implementation

We implemented survey mailings between October 10, 2018 and November 7, 2018. We contacted each member of the sample up to 4 times (i.e., an initial letter and questionnaire, a reminder postcard a week later, a second reminder letter and replacement questionnaire 2 weeks after the first reminder, and a final reminder about 1 week after the third mailing). We contracted the Survey Research Institute at Cornell University (SRI) to complete follow-up telephone interviews with a sample of 25 nonrespondents in each management zone. SRI completed a total of 200 interviews with nonrespondents between December 6, 2018 and December 17, 2018. Interviews contained 17 key questions from the mail survey and took <5 minutes to complete.

Analysis

All analyses were completed using IBM SPSS Statistics for Windows, Version 24.0 (IBM Corp. 2016). We calculated descriptive statistics (frequencies, means) to compare results for each variable across bear management zones. We used Pearson's chi square test and t-tests to test for differences between respondents and nonrespondents at the $P < 0.05$ level. We used analysis of variance (ANOVA) to identify differences between mean bear population perceptions and mean bear population preferences of respondents in different bear management zones. We created multi-item scales to measure the following concepts: bear acceptance, bear-related benefits, bear-related risks, personal control over negative interactions with bears (self-efficacy), trust in DEC as the bear-management agency, and perceived distance from black bears and interactions with black bears (Table 1). We used ordinary least squares linear regression in each bear management zone to test a model of factors hypothesized to predictor acceptance capacity for black bears. Predictor variables included multi-item scales on bear-related benefits, risks, control (self-efficacy), perceived distance from bears, trust in DEC, and a dummy variable on hunting participation (hunt: yes/no). Scale construction is described below.

Acceptance. We constructed a 4-item scale (Cronbach's $\alpha = 0.88$) to measure acceptance capacity for black bears. The first 2 items asked for perceptions of the black bear population in New York State and near where the respondent lived. These items had 5 response options, ranging from 1 (much too low) to 5 (much too high), with "about the right size" coded as 3. The second pair of items assessed respondents' preferences for change in the black bear population in New York State and near where the respondent lived. These items had 5 response options, ranging from 1 (decrease greatly) to 5 (increase greatly), with "stay about the same" coded as 3. This approach was designed to replicate the one used by Zajac et al. (2012) to assess acceptance of an emerging black bear population in Ohio. These types of acceptance capacity questions have

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been used repeatedly in surveys of deer-management stakeholders in New York State (Brown et al. 1978, Decker and Brown 1982, Decker and Gavin 1987, Sayre and Decker 1989, Siemer and Butler 2003, Siemer et al. 2018).

Table 1. Scale reliability and factor loadings of items to measure the latent variables acceptance, benefits, risks, personal control, psychological distance, and trust in DEC.

Latent variable and measurement item text	Factor loadings
Acceptance (Cronbach's α = 0.88)	
Black bear populations in NYS are… (Reverse coded)	0.861
I would prefer to see black bear populations in NYS…	0.884
Black bear populations near where I live are… (Reverse coded)	0.806
I would prefer to see black bear populations near where I live…	0.873
Benefit (Cronbach's α = 0.81)	
The presence of black bears improves the quality of life in NYS.	0.838
Having black bears in NYS is a nuisance. (Reverse coded)	0.744
Black bears improve the ecosystem health of NYS.	0.786
Black bears provide wildlife viewing and hunting opportunities for many NYS residents.	0.597
The presence of black bears benefits the economy of NYS.	0.782
Risk (Cronbach's α = 0.60)	
Encounters with black bears are likely to result in fatal consequences.	0.740
I am not familiar with the risks posed by black bears.	0.434
I am vulnerable to the risks posed by black bears.	0.752
Black bears will be more of a problem in NYS in the future.	0.739
Personal control (Cronbach's α = 0.65)	
I can prevent conflict with black bears by taking precautions around my home. (Reverse coded)	0.865
Conflict with black bears will be reduced as people learn to live with bears. (Reverse coded)	0.865
Psychological distance (Cronbach's α = 0.83)	
Black bears have effects on people I know.	0.750
Black bears mostly affect people I don't know. (Reverse coded)	0.734
My local area is affected by black bears.	0.695
Black bears mostly affect areas that are far away from where I live. (Reverse coded)	0.642
I'm unlikely to be affected by black bears in the near future. (Reverse coded)	0.754
I'm unlikely ever to be affected by black bears. (Reverse coded)	0.803
Trust in DEC (Cronbach's α = 0.92)	
DEC can effectively manage black bears.	0.904
DEC knows how to use appropriate black bear management techniques.	0.921
DEC responds to human-bear conflicts appropriately.	0.888
DEC listens to concerns about black bear management from the public.	0.894

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Benefits. We used 5 statements to create a measure of perceived bear-related benefits (Cronbach's alpha for this scale was 0.81). All items included 7 response options that ranged from -3 (strongly disagree) to +3 (strongly agree), with "0" for the response "Neither." One statement in this scale ("having bears in NYS is a nuisance") was reverse coded. We created a variable called Benefits by taking the grand mean of all 5 items in the scale. The items and item coding approach were adapted from Zajac et al. (2012).

Risks. We used 4 statements to create a measure of perceived bear-related risks (or costs) (Cronbach's $\alpha = 0.66$). All items included 7 response options that ranged from -3 (strongly disagree) to +3 (strongly agree), with "0" for the response "Neither." One of these items ("I am not familiar with the risks posed by black bears") had a low factor loading (0.434), but we retained the item because dropping it did not increase scale reliability. We created a variable called Risks by taking the grand mean of all 4 items in the scale. The items and item coding approach were adapted from Zajac et al. (2012).

Personal control. We used 2 statements to create a measure of personal control (self-efficacy in avoiding or minimizing bear-related problems) ($\alpha = 0.65$). All items included 7 response options that ranged from -3 (strongly disagree) to +3 (strongly agree), with "0" for the response "Neither." We created a variable called Personal control by taking the grand mean of both items in the scale. The items replicated those developed by Zajac et al. (2012), but were part of the risk scale in their study. In our study, these items loaded onto a second factor, which we labeled as personal control (self-efficacy).

Trust. We used 4 statements to create an index of public trust in DEC as the agency that manages black bears in New York State ($\alpha = 0.92$). These statements identified respondent's confidence that DEC can effectively manage bears, knows how to use appropriate management techniques, responds to human-bear conflicts appropriately, and listens to the public about bear-related concerns. We provided 7 response options that ranged from -3 (strongly disagree) to +3 (strongly agree), with "0" for the response "Neither." We created a variable called SocialTrust by taking the grand mean of all four items in the scale. The items and item coding approach were adapted from Zajac et al. (2012).

Psychological distance. We used 6 statements to create a measure of perceived distance from black bears or interactions with bears ($\alpha = 0.83$). We had 2 items each to measure perceived social, geographic, and temporal distance from bears, All items included 7 response options that ranged from -3 (strongly disagree) to +3 (strongly agree), with "0" for the response "Neither." Some items were reverse coded, so that agreement indicated a perception of being proximal to, and disagreement indicated a perception of being distant from, bears or bear-related impacts.

Bear population density. We used the black bear population density determinations made by DEC to create a bear density variable that ranged from 1 to 4. We coded responses from the Lake Plain management zone a 1 (i.e., bear occurrence infrequent); responses from the Southern Tier and Eastern Hudson zones 2 (i.e., bear density low); responses from the Central Adirondack, Alleghany, and Northern Catskill zones 3 (i.e., medium bear density); and responses from the Southern Catskill zone 4 (i.e., bear density high).

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RESULTS

We received a total of 4,055 completed questionnaires from a pool of 10,028 deliverable questionnaires, yielding an overall response rate of 40%. Response rates varied by bear management zone, ranging from a low of 33% in the Eastern Hudson zone to 47% in the Northern Catskill zone (Table 2).

Nonresponse Bias Analysis

Although respondents and nonrespondents did not differ with regard to their preference for bear population in their local area, we found a number of statistically-significant differences between respondents and nonrespondents (see Appendix B for a comprehensive set of respondent-nonrespondent comparisons). Nonrespondents were more likely to be female (45% vs. 35%). Nonrespondents were less likely to feed birds (54% vs. 61%); participate in hunting (21% vs. 34%), hunt bears (5% vs. 10%), have seen a bear (71% vs. 78%), or to have had a bird feeder or grill damaged by a bear (10% vs. 17%). Nonrespondents had a lower level of interest in bears, were more likely to say they were not at all concerned about encountering a bear (51% vs. 32%) or about residential property damage by bears (62% vs. 44%). Nonrespondents also were more likely to say there were no bears in their area (35% vs. 22%), and to respond "don't know" when asked how the bear population in their local area had changed over the past 5 years (34% vs. 23%).

During preliminary analysis, we explored whether respondent-nonrespondent differences could be addressed in part by weighting to adjust the male-female ratio. We found that weighting the data based on gender had little effect on the key variable from the survey (i.e., bear population preference). Therefore, we did not weight the data to adjust for respondent-nonrespondent differences in gender.

Respondent Characteristics

We found that survey respondents were older, more likely to be male, and more likely to hunt than the state population as a whole (see Appendix C for a comprehensive set of results tables for all bear management zones). Mean age of respondents was 62 years. In all bear management zones the majority of respondents were male (from 60% in the Eastern Hudson zone to 70% in the Tug Hill zone) (Table C1). Respondents lived in rural areas with few neighbors, outside towns with few neighbors, and towns or cities with many neighbors. The Lake Plain zone had the highest proportion of respondents living in a town or city with many neighbors (Table C2).

Bear-Related Experiences and Interactions

The proportion of respondents who had seen (or heard about someone who had seen) a bear within 1 mile of their home increased as bear density increased. The proportion of respondents who knew of a bear sighting that close to home was lowest (23%) in the Lake Plain BMZ (where bears occur infrequently). It was slightly higher (from 27% in the Tug Hill zone to 54% in the Eastern Hudson zone) in the zones with low bear population density. It ranged from 63% to 71% in zones with moderate bear density (i.e., Central Adirondacks, Alleghany, Northern Catskill).

Table 2. Summary of survey response by bear management zone, 2018 black bear impacts statewide mail survey.

	Bear Management Zones [1]								
	Infreq (L Plain)	NZ-Low (T Hill)	CW-Low (S Tier)	SE-Low (E Hud)	NZ-Mod (C ADK)	CW-Mod (Allegh)	SE-Mod (N Cats)	SE-High (S Cats)	Total
Sample size	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	11,200
Unusable returns	3	4	5	1	5	2	3	2	25
Undeliverable	125	191	141	134	169	138	142	132	1,172
Returns (usable)	511	495	575	420	485	526	591	446	4,055
Response rate	40.1	40.9	45.7	33.2	39.4	41.7	47.0	35.2	40.4

[1]Northern zone—moderate bear density (Central Adirondacks), Central-Western—moderate bear density (Alleghany), Southeastern—moderate bear density (Northern Catskill), Northern zone—low bear density (Tug Hill), Central-Western—low bear density (Southern Tier), Southeastern—low bear density (Eastern Hudson), Southeastern—high bear density (Southern Catskill), Bears infrequent (Lake Plain)

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The proportion of respondents who had seen (or heard about someone who had seen) a bear within 1 mile of their home was highest (76%) in the zone with the highest bear population density (i.e., the Southern Catskill BMZ). (Table C5).

The proportion of respondents who personally experienced bear damage to bird feeders or grills also increased as bear density increased. Bear damage to feeders and grills was 5% in the Lake Plain BMZ (5%), where bears occur infrequently. In the zones with low bear density, it ranged from 5% (Tug Hill zone) to 14% (Southern Tier). In zones with moderate bear density, it ranged from a low of 18% (i.e., Central Adirondacks zone), to 27% (i.e., Northern Catskills). In the Northern Catskill zone, where bear density it high, 30% of respondents had experienced damage to a feeder or grill (Table C6). The pattern observed is consistent with the management assumption that problem interactions with black bears become more likely as bear population density increases.

The proportion of respondents who had (or knew of someone who had) encountered a bear in a way they perceived as threatening to pets, livestock, or people was very low in all management zones (Table C6 – C7). Even in areas with moderate or high bear density, these types of human-bear interactions were very uncommon.

Bear Population Perceptions and Preferences

The first objective of this study was to identify residents' bear population preference statewide and in their local area. We used four questionnaire items to understand acceptance capacity for black bears. Responses to those questions are reported in Tables 3–5.

When asked how they thought the black bear population had changed in their local area, substantial minorities of respondents (15% – 33%) responded, "I don't know." The proportion of respondents who did not know how the bear population had changed was highest in the area where respondents were least likely to have seen (or heard of someone who had seen) a bear near their home, and the area of upstate New York where bears are least common (i.e., the Lake Plain area) (Table C8). The proportion who responded "I don't know" was lowest in the Southern Catskill zone (where bear population in highest).

A majority of respondents thought the bear population was about the right size statewide and in their local area. Few perceived the statewide bear population to be much too high or much too low (Table 3). In every management zone, a majority of respondents preferred that the bear population statewide stay about the same (55% – 65%) (Table 4). Majorities (57% – 67%) also preferred that the bear population in in their local area stay about the same (Table 5). The proportion who wanted the bear population in their local area to decrease ranged from 11% in the Lake Plain to 26% in the Southern Catskills. The proportion who wanted the bear population in their local area to increase ranged from 14% in the Southern Catskill zone, to 22% in the Lake Plain zone (Table 5).

Table 3. Respondents' opinion on black bear population in NYS and near where they live, by bear management zone.

	Bear Management Zones [1]							
	Infreq	NZ-Low	CW-Low	SE-Low	NZ-Mod	CW-Mod	SE-Mod	SE-High
The bear population…	(L Plain)	(Tug H)	(S Tier)	(E Hud)	(C ADK)	(Allegh)	(N Cats)	(S Cats)
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
in NYS	n=424	n=412	n=461	n=345	n=415	n=429	n=484	n=367
Much too low	5.6	5.3	6.5	3.5	2.4	3.3	3.5	3.0
Too low	21.3	17.5	22.1	13.9	15.4	15.4	16.9	11.2
About the right size	65.6	65.5	65.1	70.7	70.8	70.2	68.6	70.6
Too high	7.5	10.4	5.9	9.9	8.9	7.7	8.5	13.9
Much too high	0.0	1.2	0.4	2.0	2.4	3.5	2.5	1.4
Mean[2]	2.75 [c]	2.85 [ab]	2.72[c]	2.93 [abd]	2.93 [abd]	2.93 [abd]	2.89 [ab]	2.99 [ad]
near where I live	n=427	n=417	n=472	n=350	n=417	n=432	n=489	n=374
Much too low	17.5	13.9	11.9	9.4	4.8	4.9	4.5	6.7
Too low	14.9	18.9	22.0	14.0	15.8	13.4	14.5	9.6
About the right size	65.1	59.2	59.3	65.7	67.9	67.8	68.7	65.5
Too high	2.1	5.8	5.7	8.0	8.6	10.9	9.8	15.0
Much too high	0.5	2.2	1.1	2.9	2.9	3.0	2.5	3.2
Mean[2]	2.53 [c]	2.63 [c]	2.62 [c]	2.81[ad]	2.89 [abd]	2.94 [ab]	2.91 [abd]	2.98 [ab]

[1]Northern zone—moderate bear density (Central Adirondacks), Central-Western—moderate bear density (Alleghany), Southeastern—moderate bear density (Northern Catskill), Northern zone—low bear density (Tug Hill), Central-Western—low bear density (Southern Tier), Southeastern—low bear density (Eastern Hudson), Southeastern—high bear density (Southern Catskill), Bears infrequent (Lake Plain)

[2]Range 1 – 5, 1=Much too low, 2=Too low, 3=About the right size, 4=Too high, 5=Much too high

[abcd]Bear management zones without a letter in common are significantly different from each other at $p<0.05$ using Fisher's least significant difference (LSD) test.

Table 4. Respondents' preferences for change in black bear population in New York State, by bear management zone.

	Bear Management Zones [1]							
	Infreq (L Plain)	NZ-Low (Tug H)	CW-Low (S Tier)	SE-Low (E Hud)	NZ-Mod (C ADK)	CW-Mod (Allegh)	SE-Mod (N Cats)	SE-High (S Cats)
	n=454 (%)	n=434 (%)	n=482 (%)	n=361 (%)	n=429 (%)	n=445 (%)	n=501 (%)	n=384 (%)
Decrease greatly	2.0	6.0	3.3	5.0	5.4	4.7	4.2	5.2
Decrease slightly	6.8	10.6	7.1	10.2	12.6	9.2	11.6	12.0
Stay about the same	58.4	58.1	56.0	59.0	63.4	61.1	55.1	64.6
Increase slightly	25.8	20.3	28.0	21.3	16.3	21.3	24.8	14.8
Increase greatly	7.0	5.1	5.6	4.4	2.3	3.6	4.4	3.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mean[2]	2.70[e]	2.92 [abcdf]	2.74 [e]	2.90 [bcdf]	3.02 [adf]	2.90 [bcdf]	2.86 [bcd]	3.00 [abdf]

[1]Northern zone—moderate bear density (Central Adirondacks), Central-Western—moderate bear density (Alleghany), Southeastern—moderate bear density (Northern Catskill), Northern zone—low bear density (Tug Hill), Central-Western—low bear density (Southern Tier), Southeastern—low bear density (Eastern Hudson), Southeastern—high bear density (Southern Catskill), Bears infrequent (Lake Plain)

[2]Range 1 – 5, 1=Increase greatly, 2=Increase slightly, 3=Stay about the same, 4=Decrease slightly, 5=Decrease greatly

[abcdef]Bear management zones without a letter in common are significantly different from each other at $p<0.05$ using Fisher's least significant difference (LSD) test.

Table 5. Respondents' preferences for change in black bear population near where they live, by bear management zone.

	Bear Management Zones [1]							
	Infreq (L Plain)	NZ-Low (Tug H)	CW-Low (S Tier)	SE-Low (E Hud)	NZ-Mod (C ADK)	CW-Mod (Allegh)	SE-Mod (N Cats)	SE-High (S Cats)
	n=452 (%)	n=431 (%)	n=488 (%)	n=367 (%)	n=431 (%)	n=446 (%)	n=504 (%)	n=386 (%)
Decrease greatly	5.5	8.4	5.5	8.7	7.0	6.7	5.8	9.8
Decrease slightly	5.8	8.6	7.8	11.7	13.5	10.5	12.1	16.3
Stay about the same	66.6	61.0	56.8	60.2	60.3	61.0	58.9	60.1
Increase slightly	17.7	16.2	25.2	16.9	16.2	18.2	18.8	11.4
Increase greatly	4.4	5.8	4.7	2.5	3.0	3.6	4.4	2.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mean[2]	2.90 [bce]	2.97 [abe]	2.84 [ce]	3.07 [ab]	3.05 [ab]	2.99 [abe]	2.96 [abe]	3.20 [d]

[1]Northern zone—moderate bear density (Central Adirondacks), Central-Western—moderate bear density (Alleghany), Southeastern—moderate bear density (Northern Catskill), Northern zone—low bear density (Tug Hill), Central-Western—low bear density (Southern Tier), Southeastern—low bear density (Eastern Hudson), Southeastern—high bear density (Southern Catskill), Bears infrequent (Lake Plain)

[2]Range 1 – 5, 1=Increase greatly, 2=Increase slightly, 3=Stay about the same, 4=Decrease slightly, 5=Decrease greatly

[abcde]Bear management zones without a letter in common are significantly different from each other at $p<0.05$ using Fisher's least significant difference (LSD) test.

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Hunters were more likely than nonhunters to have a definite preference for bear population change. In every management zone respondents who participated in hunting were more likely than nonhunting respondents to prefer a bear population increase (Table C9). In 4 management zones respondents who participated in hunting were more likely than nonhunting respondents to prefer a bear population decrease; this was most pronounced in the Southern Catskill BMZ, where 37% of hunters and 24% of nonhunters wanted a bear population decrease (Table C9). These findings are noteworthy, because over a third (34%) of all respondents participated in some type of hunting (Table C4) (by comparison, it is estimated that less than 10% of adult New York State residents participate in hunting). The percentage of hunting respondents varied by management zone, from 21% in the Eastern Hudson to 42% in the Tug Hill zone (Table C4).

Results on the 4-item black bear acceptance scale are displayed in Figure 2. The acceptance scale runs from 1 (i.e., bear population much too low / want the bear population to increase greatly) to 5 (i.e., bear population much too high / want the bear population to decrease greatly). In every management zone, scale scores are near the scale midpoint, because a majority of respondents thought the bear population was about the right size and wanted it to stay about the same.

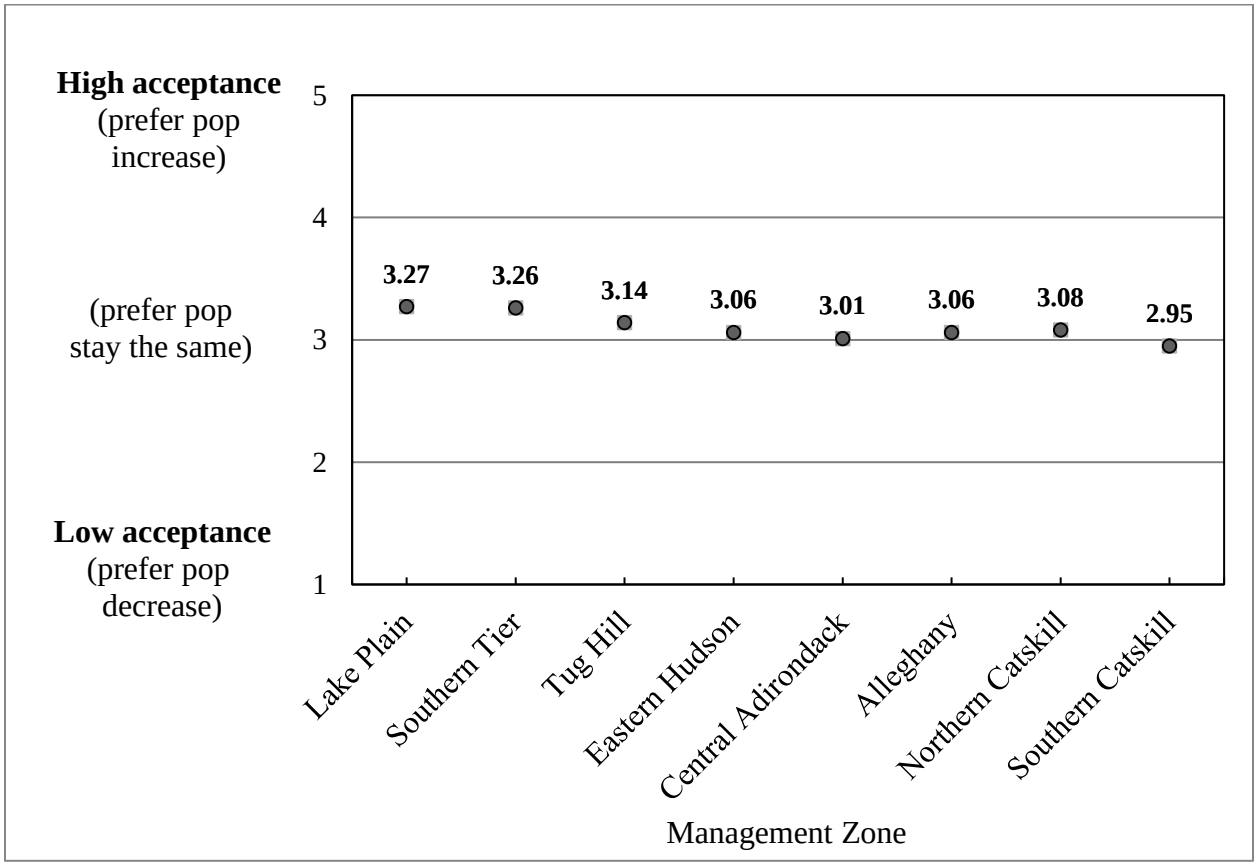

Figure 2. Mean scale sores for bear acceptance scale, by bear management zone.

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Perceived Benefits of Bears

Acceptance capacity was relatively uniform, but there were some differences between groups. On average, acceptance capacity for black bears was higher in the Southern Tier than it was in 5 other zones (i.e., higher than in the Central Adirondacks, Alleghany, Northern Catskills, Eastern Hudson, and Southern Catskills). Similarly, acceptance of bears was higher in the Lake Plain than it was in 5 other zones (i.e., higher than in the Central Adirondacks, Alleghany, Northern Catskills, Eastern Hudson, and Southern Catskills). Acceptance capacity for bears was lower in the Southern Catskills than it was in 3 other areas (i.e., lower in the Southern Catskills than it was in the Tug Hill, Southern Tier, or Lake Plain).

We used 4 items to assess benefit perceptions. Majorities of respondents in all management zones agreed or strongly agreed that bears improve quality of life, improve ecosystem health, and provide hunting and viewing opportunities. In every zone, majorities of respondents disagreed that black bears are a nuisance (Table C11). Responses to these items were converted to a 4-item benefits scale. We found relatively high bear-related benefit perceptions in all zones (Figure 3). Consistent with those findings, we found that in every zone, majorities of respondents believed that the benefits of bears outweighed the problems bears cause, or believed that the benefits of bears and the problems bears cause are about an even tradeoff (Table C12).

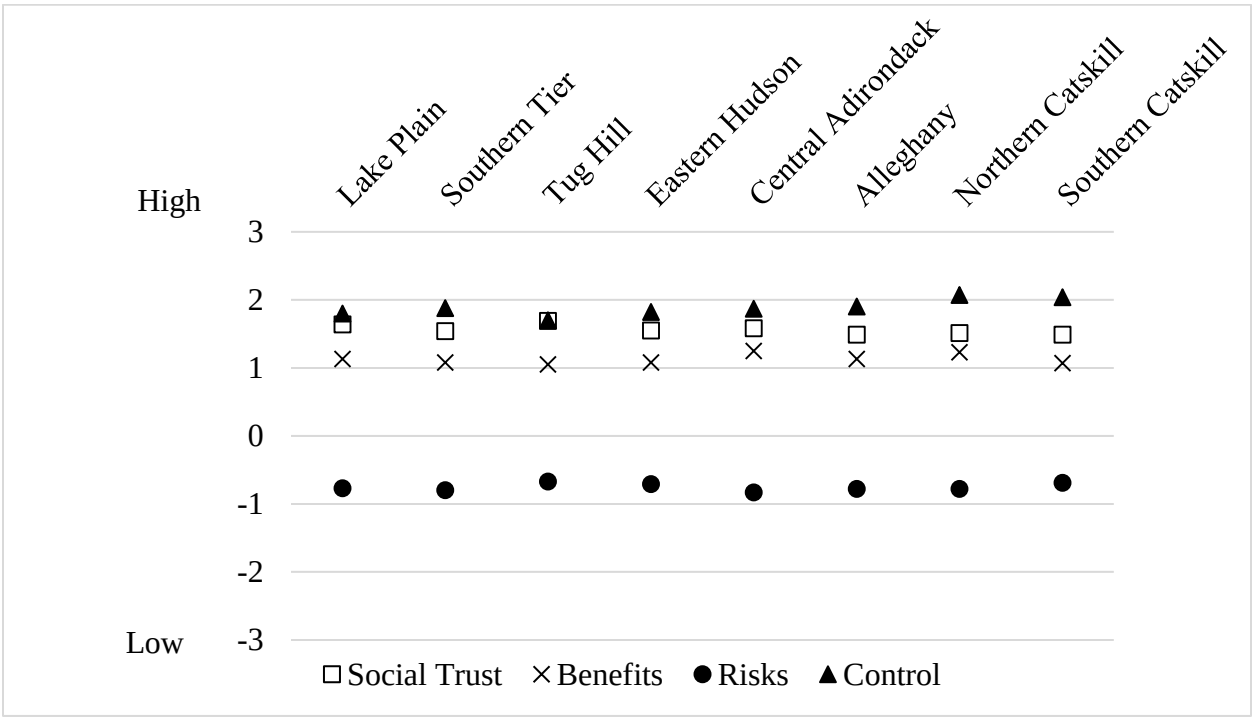

Figure 3. Mean scores for benefits, risks, control, and social trust scales, by bear management zone.

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Perceived Risks of Bears

Results on the 4-item bear-related risks scale indicated relatively low and uniform bear-related risk perceptions across the state. We found no differences between management zones on risk scale mean (Figure 3). In all zones, a majority of respondents disagreed that: encounters with bears are likely to be fatal, that they were unfamiliar with bear-related risks, or that they were vulnerable to bear-related risks (Table C14).

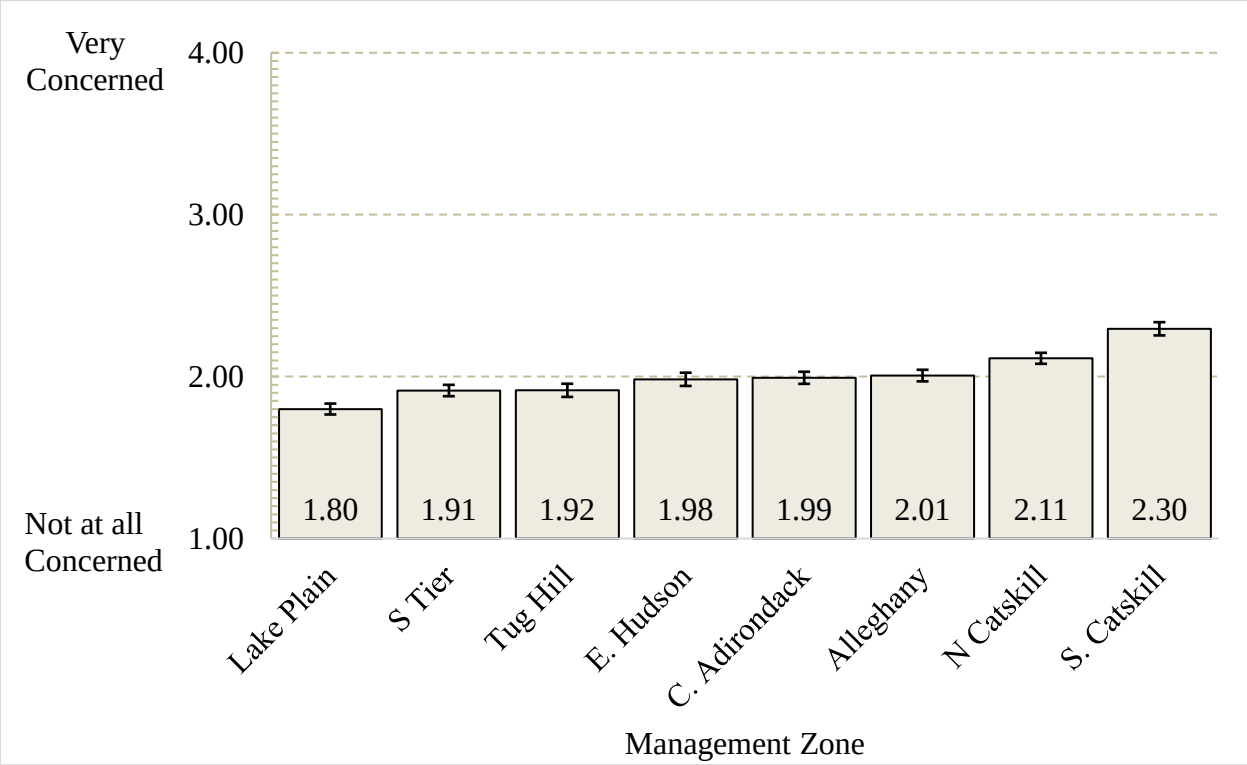

Figure 4. Grand means and standard error bars on a constructed scale averaging concerns about six types of negative human-black bear interactions, reported by bear management zone. Scale range 1 – 4 (1=not at all concerned, 2=slightly concerned, 3=moderately concerned, 4=very concerned).

Control (self-efficacy). Sense of control over hazards is assumed to lower perceptions of risk. In all management zones, respondents typically had a high sense of personal control over bear-related risks (Figure 3). Respondents generally agreed that they can prevent conflicts with bears and that conflicts will be reduced as people learn to live with bears (Table C15).

Concerns about bear-related problems. Regional patterns of bear-related concerns give additional insight into risk perceptions, because concerns about specific human-bear interactions are assumed to influence overall perceptions of bear-related risk. In most bear management zones,

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majorities of respondents expressed no concern or only slight concern about encountering bears or having property damaged by bears. Concern about these types of interactions was highest in the Southern Catskills (Table C13).

We created an aggregate measure of bear-related concern to further explore the relationship between concern and risk perception, as well as the relationship between bear population density and risk perception. Our aggregate measure of concern calculated the grand mean of all 6 concern items. Respondents who responded "unsure" to any of the concern items were deleted before calculating aggregate concern level. We display the results of this analysis in each bear management zone (BMZ) in Figure 4. We present the BMZ results in ascending order, from the area with the lowest mean on the bear-related concern scale (i.e., the Lake Plain BMZ) to the area with the highest mean on the bear-related concern scale (i.e., the Southern Catskill BMZ). We found that respondents in the Lake Plain BMZ (where bears occurred infrequently) expressed lower concern than respondents in any other zone. Respondents in Southern Tier, Tug Hill, Eastern Hudson, Central Adirondack, and Alleghany zones (where bear population density was low or moderate) all exhibited the same pattern with respect to concern: in all of those zones concern was higher than that observed in the Lake Plain, lower than that observed in the Northern or Southern Catskill zone, and no different than that observed in the other zones. In the Northern Catskill BMZ (where bear population density was moderate), respondents expressed a lower level of concern than was observed in the Southern Catskill zone, but expressed more concern than respondents in all other zones. Finally, in the Southern Catskill BMZ (where bear population density was high) concern was higher than that observed in any other zone.

Trust in DEC

Results on the 4-item social trust scale indicated high confidence in DEC, the agency that manages black bears in New York State. We found no differences between management zones on trust scale mean (Figure 3). Over 70% of respondents agreed that they were confident that DEC: can effectively manage bears, knows how to use bear management techniques, responds appropriately to human-bear conflicts, and listens to public concerns about bear management (Table C16). Confidence in DEC's ability to manage bears was high among both hunters and nonhunters.

Psychological Distance from Bears

We created a 6-item scale to measure perceptions of personal distance from bears and bear-related impacts. We found relatively wide variation in perceived distance from bears across bear management zones (Figure 5). For example, respondents in the Northern and Southern Catskill zones were more likely than respondents in most other zones to perceive themselves as geographically close to black bears, know others who have experienced bear-related impacts, and believe that they are likely to be affected by bears in the future (Table C17 – C19). Respondents from the Lake Plain were more likely than respondents in all other zones to perceive themselves as geographically, socially, and temporally distant from bears and bear-related impacts (Table C17 – C19).

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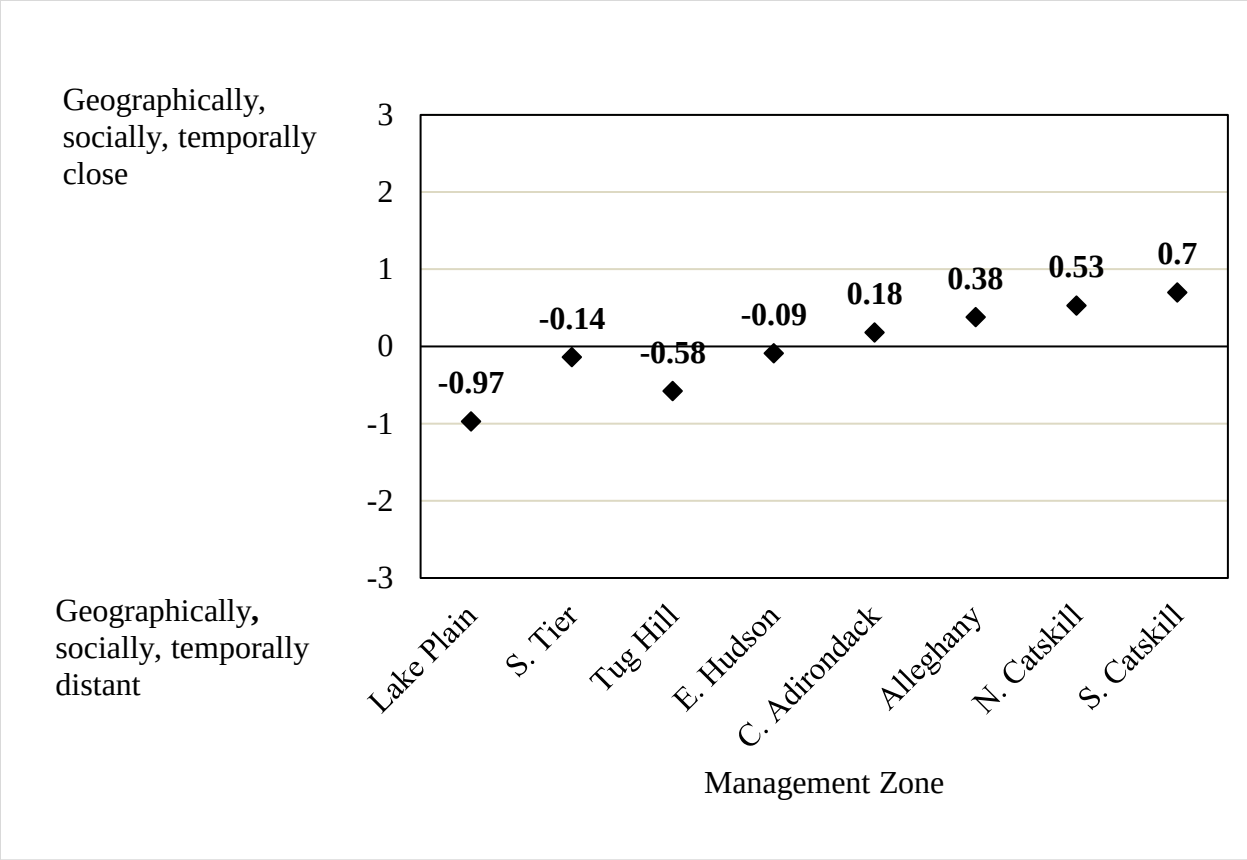

Figure 5. Mean scores for psychological distance scale, by bear management zone.

Willingness to Take Actions to Avoid Bear Attraction

We asked property owners how willing they were to take any of five actions that could prevent attraction of black bears. In all zones, a majority of respondents were very willing to take relatively low-cost problem prevention behaviors (e.g., keep garbage in a secure building prior to disposal). They were less willing to take more costly actions (i.e., were less willing to pay higher garbage collection fees to pay for distribution of bear-proof garbage containers) or actions that might limit their enjoyment of wildlife (i.e., were less willing to stop feeding birds in spring or summer) (Table C20).

Predictors of Black Bear Acceptance Capacity

Based on previous research, we hypothesized that 6 independent variables (i.e., benefits, risks, control, psychological distance, social trust, and hunting participation) would predict black bear acceptance capacity. We used ordinary least squares linear regression to test those hypotheses. Prior to conducting regression analysis, we used correlational statistics (i.e., Pearson's correlation coefficient, VIP) to assess correlations between our 6 predictor variables. We found that Pearson correlations were <0.60 for all pairs of predictor variables (Table 6). We also found

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that variance inflation factors (VIF) values between pairs of predictor variables were all low (< 1.9), indicating acceptably low levels of multicollinearity. Given these results, we retained all 6 independent variables in our regression model.

Table 6. Pearson correlations between variables in model of black bear acceptance capacity.

	Benefits scale	Risks scale	Control scale	Psychological distance scale	Trust (in DEC) scale	Hunter (dummy)
Benefits scale	—					
Risks scale	-.534**	—				
Control scale	.519**	-.332**	—			
Psychological distance scale	-.099**	.134**	-.055**	—		
Trust (in DEC) scale	.338**	-.199**	.344**	-.198**	—	
Hunter (dummy)	.080**	-.124**	.010	.104**	-.032	—

**Correlation is significant at the 0.01 level (2-tailed)

We found that all 6 independent variables were significant predictors of acceptance capacity in 2 or more management zones. In any given zone, 3-4 variables were significant predictors. Depending in the zone, these models were able to explain 31% to 50% of the variance in acceptance capacity (Table 7).

In all management zones, bear-related risk and benefit perceptions were significant predictors and explained most of the variance in acceptance capacity (Appendix D, Tables D1 – D8). As perceived benefits increased, bear acceptance increased (i.e., respondents were more likely to believe the bear population was too low and should be increased). As perceived risks increased, bear acceptance decreased (i.e., respondents were more likely to believe the bear population was too high and should be reduced). In all zones where the management goal was maintaining a low or moderate bear population density, perceived benefits of bears were a stronger predictor of acceptance than perceptions of bear related risks. For example, in the Central Adirondack zone, perceived bear-related benefits (Beta = 0.440, $p<0.001$) was a stronger predictor of bear acceptance than perceived bear-related risks (Beta = -0.207, $p<0.001$) (Table D1). In the Southern Catskill zone, where the management goal is to reduce the bear population, perceived bear-related risks (Beta = -0.333, $p<0.001$) was a stronger predictor of bear acceptance than perceived bear-related benefits (Beta = 0.220, $p<0.001$) (Table D7).

Table 7. Summary of linear regression analysis for variables predicting black bear acceptance capacity in each bear management zone.

	Bear Management Zones [1]							
	Infreq (L Plain) (n=366) *B*	NZ-Low (Tug H) (n=338) *B*	CW-Low (S Tier) (n=383) *B*	SE-Low (E Hud) (n=278) *B*	NZ-Mod (C ADK) (n=342) *B*	CW-Mod (Allegh) (n=340) *B*	SE-Mod (N Cat) (n=388) *B*	SE-High (S Cats) (n=290) *B*
Perceived bear-related risk	**-0.257*** **	**-0.217*** **	**-0.153** **	**-0.204*** **	**-0.207*** **	**-0.181*** **	**-0.130** **	**-0.333*** **
Perceived bear-related benefits	**0.263*** **	**0.427*** **	**0.399*** **	**0.416*** **	**0.440*** **	**0.431*** **	**0.530*** **	**0.220*** **
Personal control over bear-related problems	**0.095***	**0.117***	0.046	0.036	-0.025	0.021	0.014	0.020
Psychological distance	-0.044	**-0.152*** **	**-0.212*** **	**-0.192*** **	**-0.203*** **	**0.220*** **	**-0.201*** **	**-0.215*** **
Trust in DEC	0.015	0.063	0.039	**0.156** **	0.060	-0.004	-0.005	**0.112***
Participate in hunting (yes)	**0.163** **	0.030	**0.197*** **	0.057	-0.004	0.064	**0.098****	-0.025

[1]Northern zone—moderate bear density (Central Adirondacks), Central-Western—moderate bear density (Alleghany), Southeastern—moderate bear density (Northern Catskill), Northern zone—low bear density (Tug Hill), Central-Western—low bear density (Southern Tier), Southeastern—low bear density (Eastern Hudson), Southeastern—high bear density (Southern Catskill), Bears infrequent (Lake Plain)

*p< .05; **p< .01; ***p< .001

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The next most important predictor of acceptance capacity was psychological distance from bears. Respondents who perceived bears and bear-related impacts to be geographically, socially, and temporally distant were more likely to believe the bear population was too low and prefer a bear population increase (i.e., had a higher bear acceptance capacity). Psychological distance was a significant predictor of acceptance capacity in every management zone except the Lake Plain.

Participation in hunting was a significant predictor of acceptance capacity in the Northern Catskill (Beta = 0.098, $p<0.01$), Southern Tier (Beta = 0.197, $p<0.001$), and the Lake Plain (Beta = 0.163, $p<0.01$) bear management zones. In those management zones, hunting participation was positively associated with acceptance capacity (i.e., hunting participation increased the likelihood that a respondent believed the bear population was too low and preferred a bear population increase).

Trust in DEC and sense of personal control over exposure to bear-related problems were both predictors of acceptance capacity. These variables were only significant predictors in 2 management zones, however. High trust in DEC was associated with high acceptance capacity in the Eastern Hudson and Southern Catskill zones. High sense of personal control was associated with high acceptance capacity in the Tug Hill and Lake Plain zones.

DISCUSSION AND CONCLUSIONS

This publication documents findings from a 2018 survey of property owners across 8 different management zones covering all areas of upstate New York (excluding the cities of Buffalo, Rochester, and Albany). The survey provides a snapshot of property owners' black bear population preferences, interactions with and perceptions of black bears, and willingness to take actions to minimize bear attraction. Data from this study satisfy information needs identified in the 2014-24 black bear management plan (DEC 2014), namely, the need to better understand the public's experiences with black bears and their perceptions of black bears and the risks and benefits of living in areas inhabited by bears.

We documented that in some areas of the state, a majority of survey respondents had seen a bear, or knew of someone who had seen a bear, within a mile of their home. These findings suggest a growing awareness among state residents that black bears can and do live in close proximity to people. Increasing sightings of bears would be consistent with data showing range expansion and population growth for black bears in recent years (DEC 2014). The pattern observed across zones is also consistent with the assumption that human-bear interactions become more prevalent as bear population density increases.

Findings from this study suggest that acceptance capacity for black bears remains relatively high across upstate New York. The study suggests that upstate New York property owners have relatively high trust in DEC's ability to manage black bears and impacts of bears on people. Although we found statistically-significant differences across bear management zones, study findings overall suggest that perceptions of bear-related benefits and costs, and ability to control bear-related risks, were relatively similar across all management zones where black bear population density was low or moderate.

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We found some support for the management assumption that increasing bear population density leads to more negative human-bear interactions, which in turn drive higher levels of public concern about human-bear interactions. Support for this assumption is clearest at the extremes—concern levels were lowest in areas where bears occur infrequently and highest in areas with high bear density. The relationship becomes less clear in zones with low or moderate bear density. It is important to note, however, that these are subtle differences. Concern level was relatively low in every zone (i.e., mean level of concern ranged from 1.8 to 2.3, on a scale of 1 [not at all concerned] to 4 [very concerned]).

This study tested a model of factors that predict acceptance capacity for black bears. Consistent with previous research (Zajak et al. 2012), we found strong support for the proposition that perceived benefits and costs of having black bears in one's local area are important predictors of black bear acceptance capacity. We also found support for the other variables in the hazard acceptance model (Bruskotter and Wilson 2014) that have been identified as predictors of acceptance capacity, including sense of control over exposure to risks and trust in the agency responsible for bear management. These variables were not predictive in all zones, however, suggesting that they may be context specific.

We applied construal theory (Lieberman et al. 2007) to understand acceptance capacity, and found support for the hypothesis that psychological distance from bears and bear-related impacts plays a role in acceptance capacity. Future investigations of acceptance capacity for black bears should include psychological distance in models of acceptance capacity. Moreover, it may be useful for managers to determine the relationship between perceived distance from bears and actual bear densities. Currently we have little understanding of whether, or to what degree, residents accurately perceive bear densities. Problem experiences may lead some residents to overestimate bear density or proximity, while lack of personal sightings of bears may lead to the mistaken assumption that one is not living in close proximity to bears.

Finally, we included a few questions in the study to understand property owners' willingness to take actions that can minimize problem interactions with black bears. We found that most respondents were very willing to make minor changes in behavior (e.g., keeping garbage containers in a secure building). They were less willing to take actions that curtailed wildlife viewing benefits (e.g., they were less willing to stop feeding birds in spring or summer), and many not at all willing to invest money or support community-level actions that may be necessary to address community-wide problems with bears (e.g., they were often unwilling to pay a higher monthly fee for use of bear-resistant garbage cans). These findings hint at the challenges of fostering collective actions that can maintain conditions for tolerance of black bears in New York State.

Management Implications

In every bear management zone a majority of property owners preferred that the bear population in their area stay about the same size. These preferences are mostly consistent with DEC's management objectives. In 7 of the 8 bear management zones in New York State DEC's management objective is to keep the bear population at current levels.

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In the Southern Catskill management zone, however, DEC's management objective is to reduce the bear population, while a majority (60%) of property owners preferred that the bear population in their area stay about the same size. But several results support the conclusion that the Southern Catskill BMZ is distinct from other zones in ways that may necessitate additional management attention. Property owners in that zone were more likely to see bears <1 mile from their home, they were most likely to have problems with bears at grills or bird feeders, they had the highest level of concern about negative human-bear interactions, and they were more likely than respondents from other zones to believe that bears will be more of a problem in the future. Twenty-six percent of respondents from the Southern Catskill zone (including over a third of respondents who hunted) preferred a bear population reduction in their local area, which was a higher proportion than in any other zone. All of those findings suggest a need for actions aimed at reducing negative human-bear interactions. Those actions could include information, education, and interventions by DEC to directly assist individuals or communities experiencing bear-related problems. These findings also could be used as supporting evidence for DEC's current management goal (i.e., bear population reduction) in the Southern Catskill BMZ.

Despite the fact that the majority of property owners in all zones prefer that the bear population stay about the same, other property owners have different opinions. Ongoing efforts to communicate with stakeholders about the rationale behind bear management objectives could help stakeholders understand why DEC is striving to stabilize or reduce bear populations in any given management zone, even in cases where measures of acceptance capacity suggest that bear population growth would be acceptable to a portion of area residents. For example, in the Lake Plain BMZ, 22% of property owners preferred an increase in the local bear population, while DEC has an objective to keep bear occurrence "infrequent" in that zone. High acceptance capacity in the Lake Plain may be partially explained by the lack of bear-related problems that have occurred there to date. Ongoing communication from DEC or community partners could increase awareness that a higher bear population could lead to human-bear conflict in areas of the Lake Plain with intensive agricultural production or high human densities (DEC 2014, page 14).

Study Limitations

We drew a survey sample from the population of property owners in upstate New York. We used that sampling approach because it allows the researcher to identify and deliver mail directly to specific individuals and households, and it offers more complete coverage of the population of interest than we could obtain by sampling telephone directories (which exclude individuals who do not have a publicly-listed telephone number [i.e., a land line]). The mix of perceived bear-related benefits and risks may differ in other populations (e.g., New York State residents who do not own residential property), so the proportion of residents who prefer a bear population increase or decrease may also differ from what was observed in this study.

It is important to note that results presented in this report have not been weighted to adjust for hunting rate. Over a third (34%) of all respondents participated in some type of hunting, even though less than 10% of adult New York State residents hunt are estimated to hunt. The percentage of respondents who were hunters varied by management zone, from 21% in the Eastern Hudson to 42% in the Tug Hill. Exclusion of the largest urban centers in New York State

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(i.e., NYC and Long Island, Buffalo, Rochester, Albany) may partially explain why we found higher than average hunting rates in this study. The true hunting rate in each of the study areas is not known, but we did find that respondents were more likely than nonrespondents to participate in hunting. We believe that hunters responded at a higher rate than nonhunters because surveys about wildlife and wildlife management are more salient to hunters than nonhunters. We have observed this pattern repeatedly in past deer management surveys (Siemer et al. 2018). Overrepresentation of hunters is a recurring challenge for agencies seeking to engage stakeholders in wildlife management decisions.

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APPENDIX A (Survey Instrument)

Black Bears in New York State:
Your Experiences and Opinions

Research conducted for the
NYS Department of Environmental Conservation
Division of Fish and Wildlife

by the
Center for Conservation Social Sciences
Department of Natural Resources, Cornell University

Black bears are the only wild bear found in New York. Currently, there are roughly 8,000 black bears in New York. As a result of conservative hunting regulations and changing habitat, the black bear population has grown in number and expanded geographically over the past several decades. The New York State Department of Environmental Conservation (NYSDEC) is sponsoring this survey to learn more about residents' interests and concerns regarding black bears and bear management in New York State. DEC will use the information that you and other residents provide in this survey to reassess bear population goals in each region of the state.

We would like input from EVERYONE who receives this questionnaire, not just those who have strong opinions about bears. We want the results of the survey to reflect the perspectives of all area residents.

Please complete this questionnaire as soon as you can, seal it with the white re-sealable label provided, and drop it in any mailbox; ***return postage has been pre-paid***. Your identity will be kept confidential and the information you give us will never be associated with your name.

THANK YOU FOR YOUR HELP!

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YOUR PAST EXPERIENCES WITH BLACK BEARS

Note: Any reference to black bears in this survey means free ranging, wild black bears and does not include captive black bears (e.g., bears in zoos)

1. **Have you had any of the following experiences related to black bears?** (*Circle one response for each line.*)

	Yes	No	Unsure
Have you ever seen a wild black bear anywhere (not just in New York State)?	1	2	3
Have you ever seen bear tracks or evidence of black bears (anywhere, not just New York)?	1	2	3
In the past 12 months, have you seen (or heard about someone who has seen) a black bear within a mile of your home?	1	2	3

2. **Have you or someone you know had any of the following experiences with bears?** (*Circle ALL that apply.*)

	Yourself	Someone you know
Bird feeder or grill was damaged by a black bear.	1	2
Other property (e.g., garage, bee hive) was damaged by a black bear.	1	2
Black bear threatened or attacked pets.	1	2
Black bear threatened or attacked livestock.	1	2
Personally threatened by a black bear.	1	2

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3. Please indicate how much you agree or disagree with the following statements about how black bears positively or negatively affect people in New York State. (*Circle one number for each line.*)

	Strongly Agree	Moderately Agree	Slightly Agree	Neither	Slightly Disagree	Moderately Disagree	Strongly Disagree
My local area is affected by black bears.	1	2	3	4	5	6	7
Black bears mostly affect areas that are far away from where I live.	1	2	3	4	5	6	7
Black bears have effects on people I know.	1	2	3	4	5	6	7
Black bears mostly affect people I don't know.	1	2	3	4	5	6	7
I'm unlikely to be affected by black bears in the near future.	1	2	3	4	5	6	7
I'm unlikely ever to be affected by black bears.	1	2	3	4	5	6	7

YOUR VIEWS ABOUT BLACK BEARS IN NEW YORK STATE

4. How would you describe your personal level of interest in black bears in New York State? *(Circle one number.)*

1 No interest
2 Low interest
3 Moderate interest
4 High interest
5 Unsure

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5. How concerned are <u>you personally</u> about the following kinds of possible interactions with black bears in New York State? *(Circle one number for each line.)*

	Not At All Concerned	Slightly Concerned	Moderately Concerned	Very Concerned	Unsure
Encountering a bear while outdoors.	1	2	3	4	5
Being injured by a bear.	1	2	3	4	5
Residential property damage caused by bears.	1	2	3	4	5
The safety of pets that may meet a bear.	1	2	3	4	5
Agricultural (e.g., crop, bee hive) damage caused by bears.	1	2	3	4	5
Keeping bears out of garbage containers.	1	2	3	4	5

6. Please indicate how much you agree or disagree with the following statements about black bears in New York State. *(Circle one number for each line.)*

	Strongly Agree	Moderately Agree	Slightly Agree	Neither	Slightly Disagree	Moderately Disagree	Strongly Disagree
The presence of black bears improves the quality of life in New York State.	1	2	3	4	5	6	7
Encounters with black bears are likely to result in fatal consequences.	1	2	3	4	5	6	7

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6. (Continued) *(Circle one number for each line.)*

	Strongly Agree	Moderately Agree	Slightly Agree	Neither	Slightly Disagree	Moderately Disagree	Strongly Disagree
Having black bears in New York State is a nuisance.	1	2	3	4	5	6	7
I am not familiar with the risks posed by black bears.	1	2	3	4	5	6	7
Black bears improve the ecosystem health of New York State.	1	2	3	4	5	6	7
I am vulnerable to the risks posed by black bears.	1	2	3	4	5	6	7
Black bears provide wildlife viewing and hunting opportunities for many New York State residents.	1	2	3	4	5	6	7
Black bears will be more of a problem in New York State in the future.	1	2	3	4	5	6	7
The presence of black bears benefits the economy of New York State.	1	2	3	4	5	6	7
I can prevent conflict with black bears by taking precautions around my home.	1	2	3	4	5	6	7
Conflict with black bears will be reduced as people learn to live with bears.	1	2	3	4	5	6	7

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7. When you think about living with bears at their current population level, how would you weigh the benefits of bears against the problems bears cause <u>in your area</u>? *(Circle one number.)*

1 The <u>benefits</u> of bears <u>outweigh the problems</u> they cause
2 The <u>problems</u> bears cause <u>outweigh the benefits</u> of bears
3 The benefits of bears and the problems bears cause are about an <u>even trade off</u>
4 There are no bears in my local area

8. The New York State Department of Environmental Conservation (NYSDEC) is responsible for black bear management. Please indicate how much you agree or disagree with the following statements about the NYSDEC. *(Circle one number for each line.)*

I am confident that the NYSDEC:	Strongly Agree	Moderately Agree	Slightly Agree	Neither	Slightly Disagree	Moderately Disagree	Strongly Disagree
Can effectively manage black bears.	1	2	3	4	5	6	7
Knows how to use appropriate black bear management techniques.	1	2	3	4	5	6	7
Responds to human-bear conflicts appropriately.	1	2	3	4	5	6	7
Listens to concerns about black bear management from the public.	1	2	3	4	5	6	7

9. What is your opinion about the size of the black bear population in New York State and near where you live? *(Circle one number for each line.)*

Black bear populations:	Much Too Low	Too Low	About The Right Size	Too High	Much Too High
in New York State are…	1	2	3	4	5
<u>near where I live</u> are…	1	2	3	4	5

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10. How do you think the black bear population in your region of New York State has changed during the past 5 years? *(Circle one number.)*

1 Decreased greatly
2 Decreased slightly
3 Remained about the same
4 Increased slightly
5 Increased greatly
6 I don't know

11. What change, if any, would you prefer in the population of black bears in New York State and near where you live? *(Circle one number for each line.)*

I would prefer to see:	Decrease Greatly	Decrease Slightly	Stay about the Same	Increase Slightly	Increase Greatly
black bear populations in New York state…	1	2	3	4	5
black bear populations near where I live…	1	2	3	4	5

12. <u>If black bears were active in your area</u>, how willing would you be to take the following actions to avoid attracting bears? *(Circle one number for each line.)*

	Not At All willing	Slightly willing	Moderately willing	Very willing	Unsure	Does not apply to me
Keep garbage in a secure building prior to disposal.	1	2	3	4	5	6
Discontinue feeding birds in spring and summer	1	2	3	4	5	6
Put garbage out just before scheduled pick-up (not the night before).	1	2	3	4	5	6
Pay a higher monthly trash bill to rent a bear-resistant garbage can.	1	2	3	4	5	6
Feed pets Indoors	1	2	3	4	5	6

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BACKGROUND INFORMATION

13. In what year were you born? *(Fill in the blank.)* __ __ __ __

14. Are you male or female?

1 Male
2 Female

15. Which best describes the area where you live? *(Circle one number.)*

1 Town/city with many neighbors
2 Outside town with scattered neighbors
3 Rural area with few neighbors

16. Is all or part of your income from farming?

1 Yes
2 No

17. Which of the following activities do you participate in regularly? *(Circle all that apply.)*

	Yes	No
Camping	1	2
Wildlife viewing	1	2
Hiking/walking in natural areas	1	2
Feeding birds or other wildlife	1	2
Fishing	1	2
Hunting (other than bears)	1	2
Hunting black bears	1	2
Raising chickens	1	2
Maintaining bee hives	1	2

THANK YOU FOR YOUR INPUT!

To return this questionnaire, simply seal it and drop it into the nearest mailbox. Postage has already been provided.

APPENDIX B (Respondent – Nonrespondent Comparisons)

Table B1. Outcome of contacts with nonrespondents by staff at the Cornell Survey Research Institute (SRI).

	Bear Management Zone[1]								
	Infreq (L Plain)	CW-Low (S Tier)	NZ-Low (Tug H)	SE-Low (E Hud)	NZ-Mod (C ADK)	CW-Mod (Allegh)	SE-Mod (N Cat)	SE-High (S Cats)	Total
Completed	25	25	25	25	25	25	25	25	200
Interview refused	4	1	0	1	3	1	1	2	13
Pending (answer. Machine, callback apt, no answer	180	167	73	177	71	58	67	73	866
Ill, deceased	0	0	0	0	1	1	0	0	2
Language barrier	0	0	0	1	0	0	1	0	2
Non-working #	86	80	49	94	49	63	55	47	523
Mail survey returned	4	5	2	2	1	2	1	3	20
Wrong #, ineligible	0	0	1	0	0	0	0	0	1
Total	299	278	150	300	150	150	150	150	1627

[1]Northern zone—moderate bear density (Central Adirondacks), Central-Western—moderate bear density (Alleghany), Southeastern—moderate bear density (Northern Catskill), Northern zone—low bear density (Tug Hill), Central-Western—low bear density (Southern Tier), Southeastern—low bear density (Eastern Hudson), Southeastern—high bear density (Southern Catskill), Bears infrequent (Lake Plain)

Table B2. Comparison of respondents to nonrespondents on gender, 2018 black bear impacts survey.

	Respondents (n) %	Nonrespondents[a] (n) %
Male	(2,316) 65.1	(110) 55.3
Female	(1,243) 34.9	(89) 44.7
Total	(3,559)	(199)

[a]chi square= 7.9072, df=1, p=0.004

Table B3. Comparison of respondents to nonrespondents on preference for black bear population level statewide and in the respondents' local area, 2018 black bear impacts survey.

Activities:	n	Yes (%)	No (%)	Chi square	df	P
Feeding birds or wildlife						
Respondents	3,776	61.0	39.0			
Nonrespondents	198	53.5	46.5	4.3801	1	0.036
Hunting (other than bears)						
Respondents	3,639	33.7	66.3	13.26	1	<0.001
Nonrespondents	198	21.2	78.8			
Hunting bears						
Respondents	3,530	9.5	90.5	4.4003	1	0.035
Nonrespondents	198	5.1	94.9			

Table B4. Comparison of respondents to nonrespondents on proportion who had seen a wild black bear, 2018 black bear impacts survey.

	Respondents (n) %	Nonrespondents[a] (n) %
Yes	(3,148) 78.2	(142) 71.4
No	(837) 20.8	(53) 26.6
Unsure	(40) 1.0	(4) 2.0
Total	(4,025)	(200)

[a]chi square= 6.0914, df=2, p<0.047

Table B5. Comparison of respondents to nonrespondents on proportion who believed they had a bird feeder or grill damaged by a black bear, 2018 black bear impacts survey.

	Respondents (n) %	Nonrespondents[a] (n) %
Yes	(689) 17.0	(20) 10.0
No	(3,355) 83.0	(178) 89.0
Unsure	(0) 0.0	(2) 1.0
Total	(4,044)	(200)

[a]chi square= 32.13, df=2, p<0.001

Table B6. Comparison of respondents to nonrespondents on proportion who believed they had property other than a bird feeder or grill damaged by a black bear, 2018 black bear impacts survey.

	Respondents (n) %	Nonrespondents[a] (n) %
Yes	(448) 11.1	(27) 13.5
No	(3,596) 88.9	(172) 86.0
Unsure	(0) 0.0	(1) 0.5
Total	(4,044)	(200)

[a]chi square= 1.1826, df=2, p=0.276

Table B7. Comparison of respondents to nonrespondents on level of interest in black bears, 2018 black bear impacts survey.

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			Level of interest							
Potential interests:	n	Mean[a]	No interest	Low interest	Moderate interest	High interest	Unsure	Chi square	df	P
Respondents	3,599	3.06	5.0	16.5	48.7	26.8	3.0	35.75	4	<0.001
Nonrespondents	200	2.85	13.0	20.0	42.5	18.5	6.0			

[a] 1=no interest, 2=low interest, 3=moderate interest, 4=high interest, 5=unsure

Table B8. Comparison of respondents to nonrespondents on level of concern about bear-related problems, 2018 black bear impacts survey.

			Level of concern							
Potential concerns:	n	Mean[a]	Not at all concerned	Slightly concerned	Moderately concerned	Very concerned	Unsure	Chi square	df	P
Encountering a bear outdoors										
Respondents	3,688	2.15	31.2	37.1	19.5	10.3	1.9	36.85	4	<0.001
Nonrespondents	200	1.92	50.5	21.0	17.5	8.5	2.5			
Residential property damage										
Respondents	3,674	1.95	43.5	31.0	14.6	9.0	1.9	34.76	4	<0.001
Nonrespondents	200	1.76	62.0	16.0	9.5	9.0	3.5			

[a] 1=not at all concerned, 2=slightly concerned, 3=moderately concerned, 4=very concerned, 5=unsure

Table B9. Comparison of respondents to nonrespondents on level of agreement with the statement, "The presence of black bears improves the quality of life in New York State," 2018 black bear impacts survey.

	Respondents (n) %	Nonrespondents[a] (n) %
Strongly agree / Moderately agree	(1,526) 41.4	(94) 47.0
Slightly agree	(582) 15.8	(19) 9.6
Neither agree nor disagree	(1,080) 29.3	(63) 31.8
Slightly disagree	(141) 3.8	(5) 2.5
Moderately disagree Strongly disagree	(361) 9.8	(17) 8.5
Total	(3,691)	(200)

[a]chi square=7.897, df=4, p<0.096

Table B10. Comparison of respondents to nonrespondents on balance of bear-related costs and benefits in their area, 2018 black bear impacts survey.

	Respondents (n) %	Nonrespodents[a] (n) (%)
The benefits of bears outweigh the problems they may cause	(1,282) 33.9	(46) 23.8
The problems bears cause outweigh the benefits of bears	(385) 10.2	(12) 6.2
The benefits of bears and the problems they may cause are about an even tradeoff	(1,305) 34.5	(68) 35.2
There are no bears in my local area	(812) 21.5	(67) 34.7
Total	(3,691)	(193)

[a]chi square=23.05, df=3, p<0.001

Table B11. Comparison of respondents to nonrespondents on perception of change in the local black bear population during the past 5 years, 2018 black bear impacts survey.

Desired trend in local deer population in the next 5 years	Respondents (n) %	Nonrespondents[a] (n) %
Decreased slightly or greatly	(212) 5.8	(24) 12.0
Remained about the same	(774) 21.6	(34) 17.0
Increased slightly or greatly	(1788) 49.8	(74) 37.0
Don't know	(818) 22.8	(68) 34.0
Total	(3,592)	(200)

[a]chi square=29.67, df=3, p<0.001

Table B12. Comparison of respondents to nonrespondents on preference for black bear population level statewide and in the respondents' local area, 2018 black bear impacts survey.

Potential concerns:	n	Mean[a]	Level of concern: Decrease greatly	Decrease greatly	Stay about the same	Increase slightly	Increase greatly	Chi square	df	P
Preference for bear population in NYS										
Respondents	3,496	3.12	4.4	9.9	59.3	21.9	4.5	17.62	4	0.001
Nonrespondents	194	3.14	2.6	4.6	73.2	14.9	4.6			
Preference for bear population in local area										
Respondents	3,511	3.01	7.0	10.6	60.6	17.8	3.9	5.1832	4	0.269
Nonrespondents	195	3.02	5.1	8.7	68.7	14.4	3.1			

[a] 1=not at all concerned, 2=slightly concerned, 3=moderately concerned, 4=very concerned, 5=unsure

APPENDIX C (Results by bear management zone)

Table C1. Gender of respondents, by bear management zone.

	Bear Management Zone[1]							
	Infreq (L Plain)	CW-Low (S Tier)	NZ-Low (Tug H)	SE-Low (E Hud)	NZ-Mod (C ADK)	CW-Mod (Allegh)	SE-Mod (N Cats)	SE-High (S Cats)
	n=464 (%)	n=488 (%)	n=442 (%)	n=374 (%)	n=437 (%)	n=453 (%)	n=509 (%)	n=387 (%)
Male	64.2	67.8	69.9	60.4	62.5	67.1	66.0	61.2
Female	35.8	32.2	30.1	39.6	37.5	32.9	34.0	38.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1]Northern zone—moderate bear density (Central Adirondacks), Central-Western—moderate bear density (Alleghany), Southeastern—moderate bear density (Northern Catskill), Northern zone—low bear density (Tug Hill), Central-Western—low bear density (Southern Tier), Southeastern—low bear density (Eastern Hudson), Southeastern—high bear density (Southern Catskill), Bears infrequent (Lake Plain)

Table C2. Setting in which respondents' lived, by bear management zone.

	Bear Management Zone [1]							
Area I live	Infreq (L Plain)	CW-Low (S Tier)	NZ-Low (Tug H)	SE-Low (E Hud)	NZ-Mod (C ADK)	CW-Mod (Allegh)	SE-Mod (N Cats)	SE-High (S Cats)
	n=505 (%)	n=570 (%)	N=489 (%)	n=412 (%)	n=481 (%)	n=523 (%)	n=583 (%)	n=442 (%)
Town/city with many neighbors	48.1	33.9	32.9	40.5	27.4	39.6	16.6	31.7
Outside town with scattered neighbors	34.1	32.8	34.6	35.9	36.8	29.6	36.2	44.8
Rural area with few neighbors	17.8	33.3	32.5	23.5	35.8	30.8	47.2	23.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1]Northern zone—moderate bear density (Central Adirondacks), Central-Western—moderate bear density (Alleghany), Southeastern—moderate bear density (Northern Catskill), Northern zone—low bear density (Tug Hill), Central-Western—low bear density (Southern Tier), Southeastern—low bear density (Eastern Hudson), Southeastern—high bear density (Southern Catskill), Bears infrequent (Lake Plain)

Table C3. Proportion of respondents who earned all or part of their income from farming, by bear management zone.

	Bear Management Zone [1]							
	Infreq (L Plain)	CW-Low (S Tier)	NZ-Low (Tug H)	SE-Low (E Hud)	NZ-Mod (C ADK)	CW-Mod (Allegh)	SE-Mod (N Cats)	SE-High (S Cats)
	n=501 (%)	n=568 (%)	n=488 (%)	n=413 (%)	n=477 (%)	n=520 (%)	n=581 (%)	n=438 (%)
All/part of income from farming								
Yes	4.4	6.0	5.5	2.9	3.8	8.7	8.1	2.3
No	95.6	94.0	94.5	97.1	96.2	91.3	91.9	97.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1]Northern zone—moderate bear density (Central Adirondacks), Central-Western—moderate bear density (Alleghany), Southeastern—moderate bear density (Northern Catskill), Northern zone—low bear density (Tug Hill), Central-Western—low bear density (Southern Tier), Southeastern—low bear density (Eastern Hudson), Southeastern—high bear density (Southern Catskill), Bears infrequent (Lake Plain)

Table C4. Rates of participation in outdoor activities, by bear management zone.

		Bear Management Zone [1]							
		Infreq (L Plain)	CW-Low (S Tier)	NZ-Low (Tug H)	SE-Low (E Hud)	NZ-Mod (C ADK)	CW-Mod (Allegh)	SE-Mod (N Cats)	SE-High (S Cats)
Participate in…		n=437-475 (%)	n=511-542 (%)	n=416-456 (%)	n=358-388 (%)	n=431-463 (%)	n=470-494 (%)	n=511-559 (%)	n=385-414 (%)
Camping									
	Yes	39.5	41.3	47.8	35.0	49.8	37.0	40.8	28.2
	No	60.5	58.7	52.2	65.0	50.2	63.0	59.2	71.8
Wildlife viewing									
	Yes	70.3	79.0	78.6	70.9	79.8	78.1	85.0	73.2
	No	29.7	21.0	21.4	29.1	20.2	21.9	15.0	26.8
Hiking/walking in natural areas									
	Yes	72.6	76.5	72.4	77.3	80.3	73.3	77.2	75.8
	No	27.4	23.5	27.6	22.7	19.7	26.7	22.8	24.2
Feeding birds or other wildlife									
	Yes	57.4	61.4	63.1	54.9	62.6	61.9	64.4	60.7
	No	42.6	38.6	36.9	45.1	37.4	38.1	35.6	39.3
Fishing									
	Yes	44.2	46.8	54.6	38.9	54.3	47.0	45.5	33.3
	No	55.8	53.2	45.4	61.1	45.7	53.0	54.5	66.7
Hunting									
	Yes	29.3	36.6	41.5	20.5	40.4	40.0	35.7	20.8
	No	70.7	63.4	58.5	79.5	59.6	60.0	64.3	79.2

Table C4. (continued).

	Bear Management Zone [1]							
	Infreq (L Plain)	CW-Low (S Tier)	NZ-Low (Tug H)	SE-Low (E Hud	NZ-Mod (C ADK)	CW-Mod (Allegh)	SE-Mod (N Cats)	SE-High (S Cats)
	n=437-475	n=511-542	n=416-456	n=358-388	n=431-463	n=470-494	n=511-559	n=385-414
Hunting black bears								
Yes	6.6	9.2	10.1	3.4	14.6	12.3	10.4	7.7
No	93.4	90.8	89.9	96.6	85.4	87.7	89.6	92.3
Raising chickens								
Yes	7.2	10.6	9.2	9.2	9.0	12.7	18.4	9.3
No	92.8	89.4	90.8	90.8	91.0	87.3	81.6	90.7
Maintaining bee hives								
Yes	3.2	4.5	3.1	4.7	4.2	3.2	6.8	4.7
No	96.8	95.5	96.9	95.3	95.8	96.8	93.2	95.3

[1]Northern zone—moderate bear density (Central Adirondacks), Central-Western—moderate bear density (Alleghany), Southeastern—moderate bear density (Northern Catskill), Northern zone—low bear density (Tug Hill), Central-Western—low bear density (Southern Tier), Southeastern—low bear density (Eastern Hudson), Southeastern—high bear density (Southern Catskill), Bears infrequent (Lake Plain)

Table C5. Awareness and sightings of black bears, by bear management zone.

	Bear Management Zone [1]							
	Infreq (L Plain)	CW-Low (S Tier)	NZ-Low (Tug H)	SE-Low (E Hud)	NZ-Mod (C ADK)	CW-Mod (Allegh)	SE-Mod (N Cats)	SE-High (S Cats)
	n=505-508 (%)	n=567-570 (%)	n=492-493 (%)	n=413-415 (%)	n=480-478 (%)	n=520-522 (%)	n=585-587 (%)	n=444-446 (%)
Ever seen a wild black bear								
Yes	62.2	74.1	71.6	73.0	83.3	86.4	86.0	89.5
No	37.0	24.7	27.0	25.5	17.1	12.6	13.3	9.6
Unsure	0.8	1.2	1.4	1.4	0.6	1.0	0.7	0.9
Ever seen black bear tracks/evidence[3]								
Yes	48.8	62.0	61.7	55.3	75.2	72.0	74.0	69.5
No	47.6	32.9	32.5	39.1	21.0	24.7	21.7	25.8
Unsure	3.6	5.1	5.9	5.6	3.8	3.3	4.3	4.8
In past year had seen (or knew others who had seen a black bear within 1 mile of their home								
Yes	22.8	46.3	27.0	54.2	63.2	64.4	71.1	75.5
No	75.0	51.9	70.3	40.7	34.4	33.3	25.5	22.7
Unsure	2.2	1.8	2.6	5.1	2.5	2.3	3.4	1.8

[1]Northern zone—moderate bear density (Central Adirondacks), Central-Western—moderate bear density (Alleghany), Southeastern—moderate bear density (Northern Catskill), Northern zone—low bear density (Tug Hill), Central-Western—low bear density (Southern Tier), Southeastern—low bear density (Eastern Hudson), Southeastern—high bear density (Southern Catskill), Bears infrequent (Lake Plain)

Table C6. Problem experiences with bears, by bear management zone.

	Bear Management Zone [1]							
Bears…	Infreq (L Plain)	NZ-Low (Tug H)	CW-Low (S Tier)	SE-Low (E Hud)	NZ-Mod (C ADK)	CW-Mod (Allegh)	SE-Mod (N Cats)	SE-High (S Cats)
	n=511 (%)	n=493 (%)	n=573 (%)	n=417 (%)	n=482 (%)	n=524 (%)	n=591 (%)	n=446 (%)
damaged my bird feeder or grill								
Yes	4.9	4.5	14.3	11.5	17.6	25.2	27.2	29.6
No	95.1	95.5	85.7	88.5	82.4	74.8	72.8	70.4
damaged other property of mine								
Yes	5.1	4.5	7.7	7.7	10.4	15.6	16.4	21.3
No	94.9	95.5	92.3	92.3	89.6	84.4	83.6	78.7
threatened or attacked my pets								
Yes	0.8	0.4	1.9	0.5	1.5	1.5	1.9	2.0
No	99.2	99.6	98.1	99.5	98.5	98.5	98.1	98.0
threatened or attacked my livestock								
Yes	0.4	0.6	1.2	0.5	1.5	1.0	1.0	1.1
No	99.6	99.4	98.8	99.5	98.5	99.0	99.0	98.9
Bears threatened me								
Yes	1.4	1.8	3.3	0.7	2.1	1.9	1.5	3.4
No	98.6	98.2	96.7	99.3	97.9	98.1	98.5	96.6

[1]Northern zone—moderate bear density (Central Adirondacks), Central-Western—moderate bear density (Alleghany), Southeastern—moderate bear density (Northern Catskill), Northern zone—low bear density (Tug Hill), Central-Western—low bear density (Southern Tier), Southeastern—low bear density (Eastern Hudson), Southeastern—high bear density (Southern Catskill), Bears infrequent (Lake Plain)

Table C7. Respondents' awareness of others who had had a problem experience with bears, by bear management zone.

Bears…	Bear Management Zone [1]							
	Infreq (L Plain)	NZ-Low (Tug H)	CW-Low (S Tier)	SE-Low (E Hud)	NZ-Mod (C ADK)	CW-Mod (Allegh)	SE-Mod (N Cats)	SE-High (S Cats)
	n=511 (%)	n=493 (%)	n=573 (%)	n=417 (%)	n=482 (%)	n=524 (%)	n=591 (%)	n=446 (%)
damaged bird feeder or grill								
Yes	20.5	24.7	43.5	39.3	38.0	53.8	50.3	39.9
No	79.5	75.3	56.5	60.7	62.0	46.2	49.7	60.1
damaged other property								
Yes	14.5	21.5	28.4	27.3	28.8	35.3	37.6	33.9
No	85.5	78.5	71.6	72.7	71.2	64.7	62.4	66.1
threatened or attacked pets								
Yes	2.7	3.4	4.0	4.6	6.6	5.5	7.1	9.0
No	97.3	96.6	96.0	95.4	93.4	94.5	92.9	91.0
threatened or attacked livestock								
Yes	2.3	3.7	4.0	3.1	4.8	4.6	5.6	6.3
No	97.7	96.3	96.0	96.9	95.2	95.4	94.4	93.7
threatened someone I know								
Yes	4.1	3.4	3.0	1.9	5.4	4.0	4.7	6.1
No	95.9	96.6	97.0	98.1	94.6	96.0	95.3	93.9

[1]Northern zone—moderate bear density (Central Adirondacks), Central-Western—moderate bear density (Alleghany), Southeastern—moderate bear density (Northern Catskill), Northern zone—low bear density (Tug Hill), Central-Western—low bear density (Southern Tier), Southeastern—low bear density (Eastern Hudson), Southeastern—high bear density (Southern Catskill), Bears infrequent (Lake Plain)

Table C8. Respondents' perceptions of change in the black bear population in their region of New York State during the past 5 years**,** by bear management zone.

	Bear Management Zone [1]							
	Infreq (L Plain)	CW-Low (S Tier)	NZ-Low (Tug H)	SE-Low (E Hud)	NZ-Mod (C ADK)	CW-Mod (Allegh)	SE-Mod (N Cats)	SE-High (S Cats)
	n=471 (%)	n=496 (%)	n=444 (%)	n=374 (%)	n=440 (%)	n=459 (%)	n=513 (%)	n=390 (%)
Decreased greatly	1.1	0.8	1.8	0.5	2.3	2.4	1.2	1.5
Decreased slightly	4.2	2.8	4.1	2.1	5.2	5.4	5.8	5.4
Remained about the same	19.1	20.6	23.9	21.4	23.9	16.8	21.4	26.7
Increased slightly	39.1	47.2	32.9	42.2	35.5	43.8	43.5	35.6
Increased greatly	4.0	7.5	6.8	8.8	10.7	12.4	12.9	14.4
Don't know	32.5	21.2	30.6	24.9	22.5	19.2	15.2	16.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1]Northern zone—moderate bear density (Central Adirondacks), Central-Western—moderate bear density (Alleghany), Southeastern—moderate bear density (Northern Catskill), Northern zone—low bear density (Tug Hill), Central-Western—low bear density (Southern Tier), Southeastern—low bear density (Eastern Hudson), Southeastern—high bear density (Southern Catskill), Bears infrequent (Lake Plain)

Table C9. Comparison of hunting respondents' and nonhunting respondents on preferences for black bear population near where they live, by bear management zone.

	Bear Management Zone [1]							
	Infreq (L Plain)	CW-Low (S Tier)	NZ-Low (Tug H)	SE-Low (E Hud)	NZ-Mod (C ADK)	CW-Mod (Allegh)	SE-Mod (N Cats)	SE-High (S Cats)
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Hunting respondents' preference for bear population near where they live	n=121	n=166	n=161	n=71	n=161	n=165	n=163	n=71
Decrease	5.0	8.4	18.0	16.9	22.4	13.9	17.8	36.6
Stay about the same	57.0	42.2	52.2	50.7	54.0	54.5	43.6	45.1
Increase	38.0	49.4	29.8	32.4	23.6	31.5	38.7	18.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Nonhunting respondents' Preference for bear population near where they live	n=283	n=288	n=226	n=257	n=232	n=251	n=288	n=275
Decrease	12.7	16.0	16.8	20.2	18.1	18.7	17.4	24.0
Stay about the same	70.7	63.9	65.9	63.4	65.5	64.1	68.1	62.5
Increase	16.6	20.1	17.3	16.3	16.4	17.1	14.6	13.5
Total			100.0	100.0	100.0	100.0	100.0	100.0

[1]Northern zone—moderate bear density (Central Adirondacks), Central-Western—moderate bear density (Alleghany), Southeastern—moderate bear density (Northern Catskill), Northern zone—low bear density (Tug Hill), Central-Western—low bear density (Southern Tier), Southeastern—low bear density (Eastern Hudson), Southeastern—high bear density (Southern Catskill), Bears infrequent (Lake Plain)

Table C10. Respondents' personal level of interest in black bears, by bear management zone.

	Bear Management Zone [1]							
	Infreq (L Plain)	CW-Low (S Tier)	NZ-Low (Tug H)	SE-Low (E Hud)	NZ-Mod (C ADK)	CW-Mod (Allegh)	SE-Mod (N Cats)	SE-High (S Cats)
	n=480 (%)	n=496 (%)	n=445 (%)	n=365 (%)	n=436 (%)	n=452 (%)	n=517 (%)	n=404 (%)
No Interest	8.8	3.6	7.4	3.6	4.4	4.6	3.5	4.0
Low Interest	21.5	17.3	19.8	18.9	19.0	14.2	11.2	10.6
Moderate Interest	46.3	50.0	46.5	47.1	46.8	49.1	54.0	48.5
High Interest	20.8	26.8	21.8	28.5	26.8	29.0	28.0	33.9
Unsure	2.7	2.2	4.5	1.9	3.0	3.1	3.3	3.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1]Northern zone—moderate bear density (Central Adirondacks), Central-Western—moderate bear density (Alleghany), Southeastern—moderate bear density (Northern Catskill), Northern zone—low bear density (Tug Hill), Central-Western—low bear density (Southern Tier), Southeastern—low bear density (Eastern Hudson), Southeastern—high bear density (Southern Catskill), Bears infrequent (Lake Plain)

Table C11. Responses to questionnaire items that comprise the benefits scale, by bear management zone.

	Bear Management Zone [1]							
	Infreq (L Plain)	CW-Low (S Tier)	NZ-Low (Tug H)	SE-Low (E Hud)	NZ-Mod (C ADK)	CW-Mod (Allegh)	SE-Mod (N Cats)	SE-High (S Cats)
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Presence of black bears in NYS improves life quality	n=485	n=500	n=459	n=374	n=450	n=466	n=534	n=416
Strongly Agree	21.4	22.6	19.0	25.4	26.0	21.7	25.1	22.4
Moderately Agree	19.8	17.8	16.3	19.8	18.4	18.0	18.4	19.7
Slightly Agree	17.3	15.8	15.9	14.2	15.6	16.5	16.9	13.5
Neither	31.1	29.8	30.9	28.3	27.8	30.5	25.5	30.3
Slightly Disagree	2.9	5.8	4.6	2.1	4.4	2.6	3.7	3.8
Moderately Disagree	3.7	2.4	5.4	2.7	2.4	4.1	4.1	3.8
Strongly Disagree	3.7	5.8	7.8	7.5	5.3	6.7	6.4	6.5
Presence of black bears in NYS a nuisance	n=505	n=559	n=481	n=408	n=474	n=505	n=582	n=425
Strongly Agree	2.8	3.4	4.8	4.9	1.9	3.0	4.1	5.6
Moderately Agree	3.2	3.9	3.3	3.7	3.6	5.1	3.6	4.2
Slightly Agree	7.7	8.6	9.6	7.8	8.9	10.7	10.5	11.3
Neither	17.0	17.0	18.9	17.2	19.4	16.0	14.9	14.6
Slightly Disagree	10.7	11.3	13.9	11.8	9.7	10.1	12.0	9.6
Moderately Disagree	22.8	20.0	16.4	17.6	16.0	21.6	18.4	17.4
Strongly Disagree	35.8	35.8	33.1	37.0	40.5	33.5	36.4	37.2
Black bears in NYS improve ecosystem health	n=501	n=553	n=485	n=406	n=470	n=497	n=573	n=418
Strongly Agree	23.0	23.7	25.8	30.5	31.3	23.7	27.4	31.1
Moderately Agree	23.0	23.7	25.8	30.5	31.3	23.7	27.4	31.1
Slightly Agree	18.6	20.1	21.0	18.2	13.6	17.3	15.9	15.8
Neither	25.0	26.2	26.0	23.2	24.3	26.6	20.9	21.3
Slightly Disagree	3.6	3.6	3.3	2.5	2.6	2.6	3.8	2.4
Moderately Disagree	4.0	2.9	3.1	2.0	2.3	2.2	2.1	2.9
Strongly Disagree	3.2	2.7	4.5	3.9	6.2	5.2	4.9	4.8

Table C11. (continued).

	Bear Management Zone [1]							
	Infreq (L Plain)	CW-Low (S Tier)	NZ-Low (Tug H)	SE-Low (E Hud)	NZ-Mod (C ADK)	CW-Mod (Allegh)	SE-Mod (N Cats)	SE-High (S Cats)
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Black bears in NYS provide viewing/hunting opportunities	n=504	n=560	n=484	n=409	n=473	n=502	n=579	n=417
Strongly Agree	32.7	35.4	38.6	31.3	45.5	43.4	42.3	41.5
Moderately Agree	28.4	21.1	26.4	25.4	23.0	24.1	26.3	18.7
Slightly Agree	18.3	20.4	19.6	19.3	17.1	16.5	17.3	16.5
Neither	14.7	15.5	9.9	15.9	6.6	10.6	9.3	13.4
Slightly Disagree	2.0	2.3	1.7	1.7	2.1	0.8	1.2	1.9
Moderately Disagree	1.6	3.0	1.2	2.2	2.5	1.6	1.7	3.1
Presence of black bears in NYS improves economy of NYS	n=503	n=557	n=486	n=408	n=473	n=504	n=577	n=423
Strongly Agree	13.3	14.5	15.8	12.7	18.6	15.3	18.4	15.1
Moderately Agree	12.1	13.6	13.8	15.0	13.7	14.1	15.3	13.7
Slightly Agree	23.1	19.0	21.6	14.5	20.7	22.4	18.4	15.6
Neither	35.8	36.3	32.9	41.9	32.3	34.9	34.0	37.8
Slightly Disagree	35.8	36.3	32.9	41.9	32.3	34.9	34.0	37.8
Moderately Disagree	4.4	4.1	5.6	4.7	3.0	3.0	4.5	5.7
Strongly Disagree	5.0	5.6	5.6	7.1	6.3	6.5	4.2	7.1

[1]Northern zone—moderate bear density (Central Adirondacks), Central-Western—moderate bear density (Alleghany), Southeastern—moderate bear density (Northern Catskill), Northern zone—low bear density (Tug Hill), Central-Western—low bear density (Southern Tier), Southeastern—low bear density (Eastern Hudson), Southeastern—high bear density (Southern Catskill), Bears infrequent (Lake Plain)

Table C12. Respondents' perceptions of the benefit-cost tradeoff of having black bears in their local area, by bear management zone.

	Bear Management Zone [1]							
	Infreq (L Plain)	CW-Low (S Tier)	NZ-Low (Tug H)	SE-Low (E Hud)	NZ-Mod (C ADK)	CW-Mod (Allegh)	SE-Mod (N Cats)	SE-High (S Cats)
	n=487 (%)	n=540 (%)	n=459 (%)	n=391 (%)	n=457 (%)	n=483 (%)	n=558 (%)	n=403 (%)
Benefits of bears outweigh problems caused	24.2	34.3	24.8	34.3	37.0	38.5	40.3	36.7
Problems of bears outweigh benefits	5.7	10.0	8.5	12.0	10.1	11.2	10.6	14.4
Benefits/problems of bears even trade off	19.5	35.7	24.2	34.8	40.0	41.4	40.9	39.2
There are no bears in my local area	50.5	20.0	42.5	18.9	12.9	8.9	8.2	9.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1]Northern zone—moderate bear density (Central Adirondacks), Central-Western—moderate bear density (Alleghany), Southeastern—moderate bear density (Northern Catskill), Northern zone—low bear density (Tug Hill), Central-Western—low bear density (Southern Tier), Southeastern—low bear density (Eastern Hudson), Southeastern—high bear density (Southern Catskill), Bears infrequent (Lake Plain)

Table C13. Respondents' concerns about bears, by bear management zone.

	Bear Management Zone [1]							
	Infreq (L Plain)	CW-Low (S Tier)	NZ-Low (Tug H)	SE-Low (E Hud)	NZ-Mod (C ADK)	CW-Mod (Allegh)	SE-Mod (N Cats)	SE-High (S Cats)
Concerned about…	n=483-486 (%)	n=499-506 (%)	n=454-458 (%)	n=372-375 (%)	n=439-449 (%)	n=463-468 (%)	n=530-535 (%)	n=409-416 (%)
Encountering bear outdoors								
Not at all concerned	40.8	33.3	39.6	29.3	30.7	29.0	26.9	19.0
Slightly concerned	36.2	38.1	31.3	38.7	36.8	41.0	37.2	37.5
Moderately concerned	14.1	18.3	17.3	18.7	21.5	18.5	24.1	23.3
Very concerned	7.2	8.3	8.8	11.5	9.4	10.3	9.7	18.8
Unsure	1.7	2.0	3.1	1.9	1.6	1.3	2.1	1.4
Being injured by a bear								
Not at all concerned	58.4	55.7	49.6	43.0	45.4	46.4	40.1	37.4
Slightly concerned	26.6	24.3	28.2	33.7	31.8	30.3	33.9	30.6
Moderately concerned	5.8	8.5	9.3	12.6	12.9	10.7	14.5	12.9
Very concerned	7.8	8.7	10.4	9.1	6.2	7.9	8.5	16.3
Unsure	1.4	2.8	2.6	1.6	3.6	4.7	3.0	2.9
Residential property damage by bears								
Not at all concerned	55.5	46.1	51.4	47.7	41.5	38.7	35.0	32.0
Slightly concerned	28.5	32.7	21.9	29.2	33.3	36.8	35.2	29.6
Moderately concerned	10.7	11.2	15.3	14.2	15.8	12.7	16.6	21.4
Very concerned	4.5	8.4	8.5	6.7	7.4	10.8	11.1	14.5
Unsure	0.8	1.6	2.8	2.1	2.3	1.1	2.1	2.4

Table C13. (continued).

	Bear Management Zone [1]							
Concerned about…	Infreq (L Plain)	CW-Low (S Tier)	NZ-Low (Tug H)	SE-Low (E Hud)	NZ-Mod (C ADK)	CW-Mod (Allegh)	SE-Mod (N Cats)	SE-High (S Cats)
	n=483-486 (%)	n=499-506 (%)	n=454-458 (%)	n=372-375 (%)	n=439-449 (%)	n=463-468 (%)	n=530-535 (%)	n=409-416 (%)
Safety of pets encountering a bear outdoors								
Not at all concerned	46.0	38.8	43.8	35.2	41.5	37.8	34.3	29.1
Slightly concerned	30.0	30.8	27.3	31.7	26.7	32.8	29.2	25.2
Moderately concerned	12.8	17.3	14.8	15.3	15.0	14.0	18.1	20.0
Very concerned	10.1	10.9	11.7	14.2	14.1	13.4	16.4	22.0
Unsure	1.0	2.2	2.4	3.5	2.7	1.9	1.9	3.7
Agricultural property damage by bears								
Not at all concerned	57.2	49.6	47.6	51.3	45.6	43.5	40.4	44.5
Slightly concerned	22.8	25.7	23.4	25.0	25.7	28.9	29.9	22.9
Moderately concerned	12.1	13.0	14.0	12.6	14.3	16.1	18.0	15.8
Very concerned	6.0	8.1	10.9	6.7	8.7	7.9	10.5	10.2
Unsure	1.9	3.6	4.1	4.3	5.6	3.6	4.5	6.6

Table C13. (continued).

	Bear Management Zone [1]							
Concerned about…	Infreq (L Plain)	CW-Low (S Tier)	NZ-Low (Tug H)	SE-Low (E Hud)	NZ-Mod (C ADK)	CW-Mod (Allegh)	SE-Mod (N Cats)	SE-High (S Cats)
	n=483-486 (%)	n=499-506 (%)	n=454-458 (%)	n=372-375 (%)	n=439-449 (%)	n=463-468 (%)	n=530-535 (%)	n=409-416 (%)
Keeping bears out of garbage containers								
Not at all concerned	39.6	37.9	41.5	32.5	33.6	34.1	30.0	19.7
Slightly concerned	27.6	28.9	24.5	28.0	28.7	25.3	24.8	23.1
Moderately concerned	17.7	18.0	15.7	20.3	18.7	20.6	21.6	21.2
Very concerned	14.0	13.4	16.6	17.6	17.1	18.7	21.4	35.3
Unsure	1.0	1.8	1.7	1.6	1.8	1.3	2.3	0.7

[1]Northern zone—moderate bear density (Central Adirondacks), Central-Western—moderate bear density (Alleghany), Southeastern—moderate bear density (Northern Catskill), Northern zone—low bear density (Tug Hill), Central-Western—low bear density (Southern Tier), Southeastern—low bear density (Eastern Hudson), Southeastern—high bear density (Southern Catskill), Bears infrequent (Lake Plain)

Table C14. Responses to questionnaire items that comprise the risk scale, by bear management zone.

	Bear Management Zone [1]							
	Infreq (L Plain)	CW-Low (S Tier)	NZ-Low (Tug H)	SE-Low (E Hud)	NZ-Mod (C ADK)	CW-Mod (Allegh)	SE-Mod (N Cats)	SE-High (S Cats)
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Encounters with black bear likely fatal	n=485	n=504	n=459	n=373	n=450	n=466	n=533	n=416
Strongly Agree	6.0	4.6	6.8	4.0	5.3	3.2	5.3	5.0
Moderately Agree	7.4	3.4	8.3	6.2	6.7	7.5	4.7	9.9
Slightly Agree	12.2	13.5	13.7	11.5	12.7	13.9	12.6	12.5
Neither	11.3	13.5	14.2	11.5	12.2	10.9	10.7	9.4
Slightly Disagree	11.8	11.7	13.1	12.6	9.3	12.2	10.5	10.6
Moderately Disagree	23.7	17.3	21.1	24.4	20.4	17.6	20.6	18.5
Strongly Disagree	27.6	36.1	22.9	29.8	33.3	34.5	35.6	34.1
Not familiar with black bear risks	n=498	n=554	n=484	n=405	n=472	n=500	n=575	n=421
Strongly Agree	8.0	5.2	9.1	4.4	4.4	5.6	4.5	3.8
Moderately Agree	10.4	8.8	7.0	10.6	7.0	5.8	6.8	8.8
Slightly Agree	13.1	14.8	13.6	12.6	11.2	11.0	8.7	11.2
Neither	10.6	13.2	13.8	10.4	11.0	12.2	12.3	9.3
Slightly Disagree	15.1	15.3	15.5	12.8	11.7	14.4	13.0	9.5
Moderately Disagree	21.7	18.1	17.8	22.5	19.3	22.4	23.1	20.0
Strongly Disagree	21.1	24.5	23.1	26.7	35.4	28.6	31.5	37.5

Table C14. (continued).

	Bear Management Zone [1]							
	Infreq (L Plain)	CW-Low (S Tier)	NZ-Low (Tug H)	SE-Low (E Hud)	NZ-Mod (C ADK)	CW-Mod (Allegh)	SE-Mod (N Cats)	SE-High (S Cats)
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Vulnerable to risks posed by black bears	n=502	n=556	n=480	n=408	n=472	n=503	n=574	n=422
Strongly Agree	3.6	2.3	3.3	5.4	5.9	4.0	5.4	6.4
Moderately Agree	2.8	4.9	3.3	6.6	6.6	6.4	8.9	9.7
Slightly Agree	11.8	15.3	12.9	15.7	15.9	16.7	16.0	19.2
Neither	18.3	21.6	20.6	17.2	16.3	20.9	16.4	14.9
Slightly Disagree	8.4	10.3	11.7	8.6	7.6	9.9	9.2	9.2
Moderately Disagree	14.7	15.3	16.7	17.9	16.9	13.3	16.4	15.2
Strongly Disagree	40.4	30.4	31.5	28.7	30.7	28.8	27.7	25.4
Black bears in NYS will be more of a problem	n=504	n=560	n=486	n=409	n=472	n=504	n=578	n=427
Strongly Agree	6.9	5.7	8.2	10.5	10.8	8.3	9.5	12.2
Moderately Agree	11.5	10.9	10.9	11.2	11.9	11.3	10.2	14.3
Slightly Agree	17.5	18.0	15.4	18.8	11.4	15.1	18.3	15.9
Neither	27.4	27.7	28.0	24.0	26.7	26.6	25.6	25.5
Slightly Disagree	8.3	7.5	8.4	8.8	7.8	10.1	8.3	5.6
Moderately Disagree	11.3	12.9	13.0	9.0	12.7	11.1	10.0	11.2
Strongly Disagree	17.1	17.3	16.0	17.6	18.6	17.5	18.0	15.2

[1]Northern zone—moderate bear density (Central Adirondacks), Central-Western—moderate bear density (Alleghany), Southeastern—moderate bear density (Northern Catskill), Northern zone—low bear density (Tug Hill), Central-Western—low bear density (Southern Tier), Southeastern—low bear density (Eastern Hudson), Southeastern—high bear density (Southern Catskill), Bears infrequent (Lake Plain)

Table C15. Responses to questionnaire items that comprise the control (self-efficacy) scale, by bear management zone.

	Bear Management Zone [1]							
	Infreq (L Plain)	CW-Low (S Tier)	NZ-Low (Tug H)	SE-Low (E Hud)	NZ-Mod (C ADK)	CW-Mod (Allegh)	SE-Mod (N Cats)	SE-High (S Cats)
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Can prevent black bear conflict by taking precautions around home	n=503	n=559	n=486	n=407	n=472	n=506	n=582	n=426
Strongly Agree	49.3	55.6	51.0	56.5	58.7	54.0	60.7	64.1
Moderately Agree	20.7	19.3	16.0	21.9	19.9	22.9	23.2	19.7
Slightly Agree	20.7	19.3	16.0	21.9	19.9	22.9	23.2	19.7
Neither	9.5	7.5	10.7	6.4	5.1	5.7	3.1	3.1
Slightly Disagree	1.2	1.3	2.1	0.7	0.4	1.8	1.9	1.2
Moderately Disagree	1.2	1.3	2.1	0.7	0.4	1.8	1.9	1.2
Strongly Disagree	2.4	1.4	3.3	2.7	2.3	2.2	1.0	1.9
Conflict with black bears will be reduced as people learn how to live with them	n=504	n=560	n=486	n=409	n=474	n=507	n=584	n=427
Strongly Agree	41.5	42.7	38.5	38.1	43.0	43.4	46.4	46.6
Moderately Agree	22.0	20.0	22.2	24.7	18.8	21.5	22.9	21.1
Slightly Agree	16.7	17.0	17.9	16.4	17.7	16.4	16.3	14.1
Neither	8.9	9.6	9.5	7.1	7.2	9.1	5.7	7.0
Slightly Disagree	4.0	4.8	5.3	4.4	3.6	3.2	2.9	3.7
Moderately Disagree	3.6	3.0	2.7	2.9	4.6	2.6	2.6	3.0
Strongly Disagree	3.4	2.9	3.9	6.4	5.1	3.9	3.3	4.4

[1]Northern zone—moderate bear density (Central Adirondacks), Central-Western—moderate bear density (Alleghany), Southeastern—moderate bear density (Northern Catskill), Northern zone—low bear density (Tug Hill), Central-Western—low bear density (Southern Tier), Southeastern—low bear density (Eastern Hudson), Southeastern—high bear density (Southern Catskill), Bears infrequent (Lake Plain)

Table C16. Respondents' confidence in the DEC (Social trust), by bear management zone.

Confident that…	Bear Management Zone [1]							
	Infreq (L Plain)	CW-Low (S Tier)	NZ-Low (Tug H)	SE-Low (E Hud)	NZ-Mod (C ADK)	CW-Mod (Allegh)	SE-Mod (N Cats)	SE-High (S Cats)
	n=496-500 (%)	n=556-559 (%)	n=479-482 (%)	n=408-409 (%)	n=468-473 (%)	n=499-503 (%)	n=573-576 (%)	n=416-421 (%)
DEC can effectively manage black bears								
Strongly Agree	33.4	30.2	33.4	28.9	31.9	27.0	31.1	32.5
Moderately Agree	32.4	30.2	32.6	34.5	31.3	36.2	32.8	30.9
Slightly Agree	14.6	18.2	14.9	13.0	15.6	13.9	13.9	10.9
Neither	11.8	12.2	8.1	14.2	9.3	12.9	11.3	14.7
Slightly Disagree	3.8	3.6	5.0	3.9	5.3	4.0	4.9	3.3
Moderately Disagree	2.0	3.6	3.5	3.4	3.4	2.6	3.1	4.0
Strongly Disagree	2.0	2.0	2.5	2.2	3.2	3.4	3.0	3.6
DEC knows how to use appropriate black bear management techniques								
Strongly Agree	36.8	34.4	34.2	33.7	36.4	31.8	33.3	35.6
Moderately Agree	32.0	29.4	33.0	34.7	31.5	34.0	32.8	28.7
Slightly Agree	10.6	15.9	12.4	11.2	12.6	11.7	13.8	12.4
Neither	13.2	13.6	10.6	12.7	10.6	14.7	12.7	15.8
Slightly Disagree	3.8	2.3	4.8	3.2	1.9	3.4	3.0	1.9
Moderately Disagree	2.0	2.5	3.3	2.9	2.8	2.0	1.7	2.2
Strongly Disagree	1.6	1.8	1.7	1.5	4.3	2.4	2.8	3.3

Table C16. (continued).

Confident that…	Bear Management Zone [1]							
	Infreq (L Plain)	CW-Low (S Tier)	NZ-Low (Tug H)	SE-Low (E Hud)	NZ-Mod (C ADK)	CW-Mod (Allegh)	SE-Mod (N Cats)	SE-High (S Cats)
	n=496-500 (%)	n=556-559 (%)	n=479-482 (%)	n=408-409 (%)	n=468-473 (%)	n=499-503 (%)	n=573-576 (%)	n=416-421 (%)
DEC responds to human-bear conflicts appropriately								
Strongly Agree	32.5	32.1	34.0	29.6	36.0	31.5	30.2	30.5
Moderately Agree	28.2	26.9	26.1	30.1	28.7	27.1	26.5	26.7
Slightly Agree	11.3	11.1	12.5	9.0	12.3	10.2	14.7	11.3
Neither	21.8	23.5	21.7	24.9	15.7	24.6	21.3	22.8
Slightly Disagree	3.4	2.5	2.7	2.4	3.2	3.2	2.6	3.6
Moderately Disagree	1.4	2.5	2.1	2.4	1.9	1.4	1.7	1.9
Strongly Disagree	1.4	1.3	0.8	1.5	2.1	2.0	3.0	3.1
DEC listens to public concerns about black bear management								
Strongly Agree	33.6	30.9	34.0	31.1	33.1	29.9	30.4	32.0
Moderately Agree	29.0	29.9	26.9	28.7	28.6	29.1	26.4	29.6
Slightly Agree	12.9	10.7	13.4	13.5	14.1	12.2	16.7	11.7
Neither	19.5	20.2	19.0	20.8	14.7	20.5	18.6	19.3
Slightly Disagree	1.8	3.8	2.5	1.7	1.9	3.4	3.0	1.7
Moderately Disagree	2.0	2.3	2.3	2.7	3.0	1.6	1.9	2.6
Strongly Disagree	1.2	2.1	1.9	1.5	4.5	3.4	3.1	3.1

[1]Northern zone—moderate bear density (Central Adirondacks), Central-Western—moderate bear density (Alleghany), Southeastern—moderate bear density (Northern Catskill), Northern zone—low bear density (Tug Hill), Central-Western—low bear density (Southern Tier), Southeastern—low bear density (Eastern Hudson), Southeastern—high bear density (Southern Catskill), Bears infrequent (Lake Plain)

Table C17. Respondents' perceptions of geographic distance from black bears, by bear management zone.

	Bear Management Zone [1]							
	Infreq (L Plain)	CW-Low (S Tier)	NZ-Low (Tug H)	SE-Low (E Hud)	NZ-Mod (C ADK)	CW-Mod (Allegh)	SE-Mod (N Cats)	SE-High (S Cats)
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
My local area is affected by black bears	n=479	n=499	n=454	n=371	n=447	n=462	n=530	n=414
Strongly Agree	2.1	10.6	5.3	12.9	17.2	20.8	18.5	26.3
Moderately Agree	5.0	13.0	6.6	10.2	17.7	17.7	22.5	20.3
Slightly Agree	13.8	21.4	17.2	26.7	22.1	21.6	25.8	26.1
Neither	16.1	19.0	17.8	17.5	14.8	15.2	14.2	8.0
Slightly Disagree	6.9	6.4	7.5	3.8	4.7	5.8	4.2	3.4
Moderately Disagree	11.5	9.6	13.4	10.5	8.9	8.7	5.8	5.6
Strongly Disagree	44.7	19.8	32.2	18.3	14.5	10.2	9.1	10.4
Black bears mostly affect areas that are far away from where I live	n=480	n=499	n=456	n=373	n=440	n=456	n=524	n=408
Strongly Agree	21.3	7.2	18.4	11.3	7.7	5.7	6.1	5.6
Moderately Agree	26.5	15.8	21.1	18.8	13.2	11.4	9.9	9.6
Slightly Agree	15.4	15.8	18.2	15.8	13.6	9.9	11.8	12.3
Neither	11.9	14.6	12.3	10.5	11.4	15.1	12.8	10.3
Slightly Disagree	12.7	13.0	9.0	14.5	11.4	11.8	11.5	9.3
Moderately Disagree	6.9	15.2	11.0	11.3	17.3	15.8	19.1	19.1
Strongly Disagree	5.4	18.2	10.1	18.0	25.5	30.3	28.8	33.8

[1]Northern zone—moderate bear density (Central Adirondacks), Central-Western—moderate bear density (Alleghany), Southeastern—moderate bear density (Northern Catskill), Northern zone—low bear density (Tug Hill), Central-Western—low bear density (Southern Tier), Southeastern—low bear density (Eastern Hudson), Southeastern—high bear density (Southern Catskill), Bears infrequent (Lake Plain)

Table C18. Respondents' perceptions of social distance from black bears, by bear management zone.

	Bear Management Zone [1]							
	Infreq (L Plain)	CW-Low (S Tier)	NZ-Low (Tug H)	SE-Low (E Hud)	NZ-Mod (C ADK)	CW-Mod (Allegh)	SE-Mod (N Cats)	SE-High (S Cats)
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Black bears have effects on people I know								
	n=479	n=499	n=456	n=371	n=441	n=452	n=524	n=409
Strongly Agree	5.6	10.0	9.4	15.1	15.6	19.9	21.0	24.2
Moderately Agree	8.4	12.8	11.0	10.8	11.8	13.9	16.6	13.4
Slightly Agree	13.8	18.8	12.7	17.0	18.8	21.0	17.6	20.0
Neither	16.5	21.8	23.2	20.5	21.5	18.8	20.6	19.1
Slightly Disagree	3.5	3.8	5.0	3.5	5.2	4.9	4.8	4.2
Moderately Disagree	11.1	8.0	9.0	10.2	7.0	7.5	6.7	5.6
Strongly Disagree	41.1	24.6	29.6	22.9	20.0	13.9	12.8	13.4
Black bears mostly affect people I don't know								
	n=477	n=489	n=451	n=368	n=430	n=444	n=515	n=398
Strongly Agree	34.6	18.2	22.8	19.0	14.0	10.8	11.3	9.3
Moderately Agree	16.6	13.1	15.1	16.3	13.0	9.7	9.9	12.8
Slightly Agree	10.7	12.7	12.9	12.5	10.9	9.2	9.9	8.3
Neither	21.2	32.5	27.7	26.4	32.1	32.7	32.0	29.4
Slightly Disagree	5.5%	5.3	5.1	4.6	5.8	8.6	7.2	8.0
Moderately Disagree	3.1	5.9	5.5	7.1	7.0	10.1	10.9	8.5
Strongly Disagree	8.4	12.3	10.9	14.1	17.2	18.9	18.8	23.6

[1]Northern zone—moderate bear density (Central Adirondacks), Central-Western—moderate bear density (Alleghany), Southeastern—moderate bear density (Northern Catskill), Northern zone—low bear density (Tug Hill), Central-Western—low bear density (Southern Tier), Southeastern—low bear density (Eastern Hudson), Southeastern—high bear density (Southern Catskill), Bears infrequent (Lake Plain)

Table C19. Respondents' perceptions of temporal distance from black bear impacts, by bear management zone.

	Bear Management Zone [1]							
	Infreq (L Plain)	CW-Low (S Tier)	NZ-Low (Tug H)	SE-Low (E Hud)	NZ-Mod (C ADK)	CW-Mod (Allegh)	SE-Mod (N Cats)	SE-High (S Cats)
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
I'm unlikely to be affected by black bears in the near future	n=481	n=500	n=457	n=375	n=446	n=459	n=528	n=413
Strongly Agree	34.3	26.4	30.6	21.6	18.4	20.5	16.7	13.3
Moderately Agree	18.3	14.6	16.2	15.5	16.	15.3	13.4	13.6
Slightly Agree	11.9	14.4	12.0	16.3	13.0	11.3	14.8	11.4
Neither	10.4	14.8	13.6	12.5	17.0	14.4	12.7	10.9
Slightly Disagree	10.0	10.8	9.4	11.2	9.4	13.9	14.2	16.7
Moderately Disagree	6.4	8.0	7.4	11.2	11.4	10.7	13.3	15.0
Strongly Disagree	8.7	11.0	10.7	11.7	14.1	13.9	15.0	19.1
I'm unlikely ever to be affected by black bears	n=481	n=503	n=458	n=374	n=445	n=458	n=527	n=412
Strongly Agree	21.8	16.7	20.7	10.7	12.8	11.6	9.5	9.5
Moderately Agree	18.9	12.7	15.1	15.0	10.6	12.2	8.9	6.8
Slightly Agree	11.6	13.1	11.8	11.8	12.1	8.5	10.4	10.9
Neither	13.9	12.9	13.1	14.4	13.5	15.3	11.8	9.7
Slightly Disagree	11.9	13.1	12.7	14.2	15.5	15.3	15.2	11.2
Moderately Disagree	8.5	12.9	11.8	12.3	12.4	13.1	17.1	17.7
Strongly Disagree	13.3	18.5	14.8	21.7	23.1	24.0	27.1	34.2

[1]Northern zone—moderate bear density (Central Adirondacks), Central-Western—moderate bear density (Alleghany), Southeastern—moderate bear density (Northern Catskill), Northern zone—low bear density (Tug Hill), Central-Western—low bear density (Southern Tier), Southeastern—low bear density (Eastern Hudson), Southeastern—high bear density (Southern Catskill), Bears infrequent (Lake Plain)

Table C20. Respondents' willingness to take actions to avoid attracting bears, by bear management zone.

	Bear Management Zone [1]							
	Infreq (L Plain) n=465-469	CW-Low (S Tier) n=492-495	NZ-Low (Tug H) n=441-444	SE-Low (E Hud) n=371-373	NZ-Mod (C ADK) n=434-438	CW-Mod (Allegh) n=451-456	SE-Mod (N Cats) n=511-516	SE-High (S Cats) n=387-390
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Keep garbage in a secure building								
Not at all willing	2.8	1.2	4.1	3.5	1.8	2.9	3.1	4.1
Slightly willing	4.1	4.0	4.1	8.3	3.9	2.4	4.7	5.9
Moderately willing	9.6	11.1	7.7	9.4	8.7	10.8	6.2	9.0
Very willing	76.8	76.9	77.5	73.7	80.6	77.2	81.4	76.5
Unsure	0.6	1.6	1.8	0.5	1.1	2.2	1.0	1.0
Does not apply to me	6.2	5.1	5.0	4.6	3.9	4.4	3.7	3.4
Discontinue feeding birds in spring and summer								
Not at all willing	11.8	13.1	15.6	9.6	12.3	13.8	9.9	9.7
Slightly willing	9.9	14.3	16.1	10.7	9.1	13.8	10.3	9.2
Moderately willing	16.8	14.9	9.0	11.5	13.7	14.9	16.3	12.1
Very willing	45.2	41.8	42.3	48.4	47.0	39.7	50.9	50.8
Unsure	4.9	3.0	5.2	3.5	3.9	4.2	3.7	3.8
Does not apply to me	11.4	12.7	11.8	16.3	13.9	13.6	8.9	14.4
Put garbage out just before pickup								
Not at all willing	6.4	6.5	7.0	8.8	3.7	5.1	4.1	10.8
Slightly willing	4.5	7.5	6.5	9.3	6.0	5.5	6.2	10.8
Moderately willing	12.4	11.2	7.9	11.5	7.6	9.5	8.4	10.3
Very willing	67.4	60.6	63.0	55.2	65.1	58.8	62.6	55.2
Unsure	2.1	1.6	1.8	1.6	1.4	2.6	1.0	1.3
Does not apply to me	7.2	12.6	13.8	13.6	16.3	18.5	17.7	11.6

Table C20. (continued).

	Bear Management Zone [1]							
	Infreq (L Plain) n=465-469	CW-Low (S Tier) n=492-495	NZ-Low (Tug H) n=441-444	SE-Low (E Hud) n=371-373	NZ-Mod (C ADK) n=434-438	CW-Mod (Allegh) n=451-456	SE-Mod (N Cats) n=511-516	SE-High (S Cats) n=387-390
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Pay higher garbage bill to rent a bear-resistant garbage can								
Not at all willing	30.3	34.5	33.1	28.7	29.7	34.4	31.3	30.2
Slightly willing	16.2	11.4	11.8	14.5	11.1	14.8	11.5	12.4
Moderately willing	11.5	13.0	11.1	15.0	10.6	7.5	10.4	9.8
Very willing	22.6	16.0	19.0	18.0	16.1	10.4	18.8	21.9
Unsure	7.7	6.7	5.7	5.6	6.2	4.9	5.1	5.9
Does not apply to me	11.7	18.5	19.3	18.2	26.3	28.0	22.9	19.8
Feed pets indoors								
Not at all willing	1.9	3.2	5.7	1.3	3.7	4.0	3.5	2.6
Slightly willing	2.6	3.2	2.9	3.2	3.2	3.8	2.3	1.6
Moderately willing	6.0	4.7	4.3	3.2	3.7	6.0	4.7	2.3
Very willing	63.5	64.3	62.0	62.3	65.2	58.5	67.8	61.5
Unsure	1.1	1.2	1.4	1.1	0.7	1.8	0.8	1.3
Does not apply to me	25.0	23.3	23.8	28.8	23.5	25.9	20.9	30.7

[1]Northern zone—moderate bear density (Central Adirondacks), Central-Western—moderate bear density (Alleghany), Southeastern—moderate bear density (Northern Catskill), Northern zone—low bear density (Tug Hill), Central-Western—low bear density (Southern Tier), Southeastern—low bear density (Eastern Hudson), Southeastern—high bear density (Southern Catskill), Bears infrequent (Lake Plain)

APPENDIX D (Results of linear regression analysis in each bear management zone)

Table D1. Summary of linear regression analysis for variables predicting black bear population preference in the Lake Plain bear management zone.

Predictor variables	*B*	*Beta*	t
(Constant)	2.809		45.617***
Risk	-0.128	-0.257	-4.684***
Benefits scale	0.154	0.263	4.452***
Personal control	0.048	0.095	1.939*
Psychological distance	-0.022	-0.044	-.965
Social trust	0.008	0.015	0.315
Hunter (dummy variable)	0.223	0.163	3.511**
Final statistics	R^2=0.327 Adjusted R^2=0.316 $F(6,366)=29.614^{***}$		

*p = 0.05; **p< 0.01; ***p< 0.001

Table D2. Summary of linear regression analysis for variables predicting black bear population preference in the Southern Tier bear management zone.

Predictor variables	*B*	*Beta*	t
(Constant)	2.772		54.240***
Risk	-0.083	-0.153	-3.173**
Benefits scale	0.231	0.399	7.768***
Personal control	0.024	0.046	0.973
Psychological distance	-0.101	-0.212	-5.385***
Social trust	0.019	0.039	0.898
Hunter (dummy variable)	0.271	0.197	5.028***
Final statistics	R^2=0.439 Adjusted R^2=0.430 $F(6,383)=49.887^{***}$		

*p< 0.05; **p< 0.01; ***p< 0.001

Table D3. Summary of linear regression analysis for variables predicting black bear population preference in the Tug Hill bear management zone.

Predictor variables	*B*	*Beta*	t
(Constant)	2.582		46.553***
Risk	-0.128	-0.217	-4.411***
Benefits scale	0.247	0.427	8.071***
Personal control	0.062	0.117	2.550*
Psychological distance	-0.076	-0.152	-3.728***
Social trust	0.035	0.063	1.513
Hunter (dummy variable)	0.045	0.030	0.776
Final statistics	R^2=0.512 Adjusted R^2=0.503 $F(6,338)=59.070^{***}$		

*p< 0.05; **p< 0.01; ***p< 0.001

Table D4. Summary of linear regression analysis for variables predicting black bear population preference in the Eastern Hudson bear management zone.

Predictor variables	*B*	*Beta*	t
(Constant)	2.535		41.786***
Risk	-0.115	-0.204	-3.725***
Benefits scale	0.239	0.416	7.400***
Personal control	0.020	0.036	0.765
Psychological distance	-0.087	-0.192	-4.201***
Social trust	0.088	0.156	3.390**
Hunter (dummy variable)	0.099	0.057	1.336
Final statistics	R^2=0.512 Adjusted R^2=0.501 $F(6,278)=48.603^{***}$		

*p< 0.05; **p< 0.01; ***p< 0.001

Table D5. Summary of linear regression analysis for variables predicting black bear population preference in the Central Adirondacks bear management zone.

Predictor variables	*B*	*Beta*	t
(Constant)	2.635		44.702***
Risk	-0.108	-0.207	-4.137***
Benefits scale	0.236	0.440	8.073***
Personal control	-0.012	-0.025	-0.509
Psychological distance	-0.091	-0.203	-4.677***
Social trust	0.027	0.060	1.297
Hunter (dummy variable)	-0.006	-0.004	-0.106
Final statistics	R^2=0.428 Adjusted R^2=0.418 $F(6,342)$= 42.685***		

*p< 0.05; **p< 0.01; ***p< 0.001

Table D6. Summary of linear regression analysis for variables predicting black bear population preference in the Alleghany bear management zone.

Predictor variables	*B*	*Beta*	t
(Constant)	2.708		44.368***
Risk	-0.104	-0.181	-3.560***
Benefits scale	0.239	0.431	7.189***
Personal control	0.012	0.021	0.396
Psychological distance	-0.107	-0.220	-5.062***
Social trust	-0.002	-0.004	-0.094
Hunter (dummy variable)	0.064	0.045	1.041
Final statistics	R^2=0.401 Adjusted R^2=0.390 $F(6,340)$=37.906***		

*p< 0.05; **p< 0.01; ***p< 0.001

Table D7. Summary of linear regression analysis for variables predicting black bear population preference in the Northern Catskills bear management zone.

Predictor variables	*B*	*Beta*	t
(Constant)	2.627		43.974***
Risk	-0.076	-0.130	-2.963**
Benefits scale	0.301	0.530	10.535***
Personal control	0.008	0.014	0.304
Psychological distance	-0.105	-0.201	-5.300***
Social trust	-0.003	-0.005	-0.125
Hunter (dummy variable)	0.143	0.098	2.613**
Final statistics	R^2=0.484 Adjusted R^2=0.476 $F(6,388)=60.654^{***}$		

*p< 0.05; **p< 0.01; ***p< 0.001

Table D8. Summary of linear regression analysis for variables predicting black bear population preference in the Southern Catskills bear management zone.

Predictor variables	*B*	*Beta*	t
(Constant)	2.703		41.372***
Risk	-0.175	-0.333	-6.076***
Benefits scale	0.116	0.220	3.623***
Personal control	0.010	0.020	0.350
Psychological distance	-0.098	-0.215	-4.501***
Social trust	0.050	0.112	2.175*
Hunter (dummy variable)	-0.041	-0.025	-0.534
Final statistics	R^2=0.369 Adjusted R^2=0.356 $F(7,290)=28.320^{***}$		

*p< 0.05; **p< 0.01; ***p< 0.001